MODERN PACKAGING

★ MAY ★ BUY WAR BONDS ★ 1943 ★

SOLVING A PAINT PROBLEM THE WAR CREATED

Canco's New Paint Container Saves Metal

IT LOOKS LIKE a regular metal paint can, but it isn't.

It's Canco's new gallon-size* paint container, made with a fibre body, enameled steel ends, inner protective lining and water-repellent outer coating.

Naturally this container isn't as strong as an all-metal can, but as a wartime substitute, it offers many advantages. Here are a few of the more important ones:

1. ***Existing*** **equipment can be used to fill, pack and handle this new package.**
2. **Since the shape is approximately the same as an all-metal can, the paint manufacturer can apply his own familiar label . . . and fully maintain his brand identity in the public mind.**
3. **It has our regular "Doubletite" friction top, as previously used on tin cans.**
4. **It is lighter and more compact than other available substitute containers.**
5. **Protects contents from light.**

**Present limitations on metal for the ends permit manufacture of the gallon size only.*

Ingenuity on the part of Canco technical and research men produced this new package. It's only one of their answers to the problems of wartime containers. We're doing our level best to meet those problems, difficult as they are, in order to facilitate the distribution of package goods for home consumption.

This work, of course, must and will proceed without interfering in any way with the large and important contribution we are making daily to the war effort.

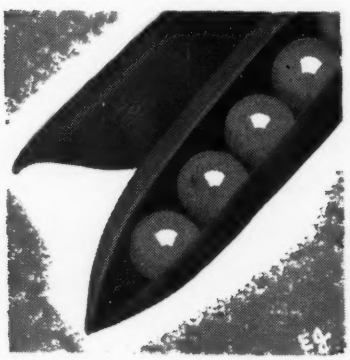
Stop accidents NOW
—save Manpower for Warpower

Co-operate with the War Production Fund to Conserve Manpower by warning your employees not to take chances.

☆ ☆ **AMERICAN CAN COMPANY** ☆ ☆

230 PARK AVENUE, NEW YORK, N. Y.

Uniformity in a product depends to a large degree upon the use of superior raw materials, effective methods and experienced workmen. Shortages and substitutes, this past year, have complicated matters somewhat. But despite these complications, many manufacturers have adhered to the exacting standards established long before the present emergency.



"Alike as peas in a pod" is no idle catch-phrase. It describes thousands of American-made products. We believe it describes the Phoenix C T Cap. Adaptable, dependable, convenient; decorative, yet economical; simple in construction; precision made; standard; uniform, both in fit and appearance.

Phoenix Metal Cap Co., 2444 W. Sixteenth St., Chicago; 3720 Fourteenth Ave., Brooklyn.

Modern Packaging

CHARLES A. BRESKIN, *Publisher*
CHRISTOPHER W. BROWNE, *Editor*
PEARL HAGENS, *Managing Editor*
IRIS VINTON, *Associate Editor*
CHARLES A. SOUTHWICK, JR., *Technical Editor*
R. L. VAN BOSKIRK, *Washington Editor*
HAROLD K. BEMENT, *Art Director*
FLORENCE GETTER, *Editorial Assistant*

VOLUME 16 — MAY 1943 — NUMBER 9

WHAT IS THE ARCH ENEMY OF THE EXPORT SHIPPER?

Ninety per cent of all reported damage to material shipped to China in recent months was due to corrosion; only 10 per cent to faulty packaging. That statement by one of the speakers at the recent Packaging Conference is an indication of where the most serious problems of export shipping still lie. Removal of enough metal to eradicate rust from the infinitesimal tolerances of precision instruments is sometimes enough to make such items totally useless. Goods that cannot be used on the war fronts, might just as well not be sent.

Great strides are being made in methods for preventing corrosion. The dehydration process, known as Method II, was discussed in detail in a recent issue of Modern Packaging. But what has happened to the old "bear grease" methods? In a forthcoming article, we will bring you a discussion of Method I—preventing corrosion by coatings and wrappings—as different from the cosmoline technique of World War I as trench warfare is from aerial.

Member of Audit Bureau of Circulation

ABC

Packaging Exposition

Record Attendance 63
Military Exhibits 64–67
Conference Report 68–78

General

Wood for War 41
Gift Supplies—Not Out but Scarce 46
Design Histories 50
Latest Revisions in Ration K 52
Packaging Pageant 54
A GI Looks at a PX 56
Concrete Molds Turned into Fibre Drums 58
Lay-Away Orders for Machinery 92

Display

Merchants Like Ration Aids 79
Display Gallery 80
Counter Cards for Inexperienced Help 82

Technique

Heat Sealing—Agents and Applications 85
Fibre Cans on Tin Lines 89
Questions and Answers 90

Departments

Washington Review 94
U. S. Patent Digest 98
Equipment and Materials 100
Plants and People 102
For Your Information 104

COVER—War Bond Poster, reproduced through courtesy of United States Treasury Dept.

ALAN S. COLE, General Manager
WALTER S. ROSS, Promotion
L. B. CHAPPELL, Los Angeles
P. H. BACKSTROM
M. A. OLSEN
J. M. CONNORS
R. C. BEGGS
F. L. POSNER, Circulation
F. M. McQUILLEN, Production

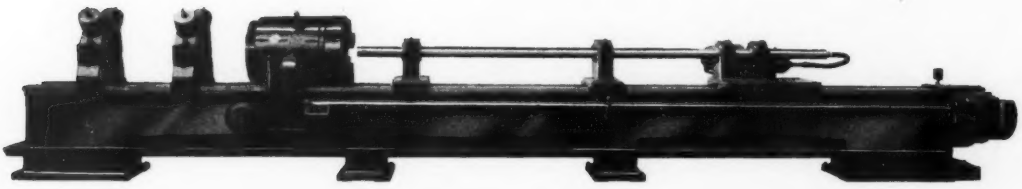
Published the 1st of each month by Breskin Publishing Corporation. Publication office, Twentieth and Northampton Sts., Easton, Pa. Executive and Editorial Offices, 122 E. 42nd St. (Chanin Bldg.), New York, N. Y. Phone AShland 4-0655. Cleveland office, 1012 N. B. C. Bldg., Superior 0737. Chicago office, 221 N. LaSalle St., Room 1338. Phone Randolph 6336. Los Angeles Office, 427 West 5th St. Washington, D. C., office, Room 625, Colorado Bldg. Phone Exec. 0987. Sponsors of the All-America Package Competition. Subscription $5.00 per year in United States; Canadian, $5.50; foreign, $6.00. Two year subscription United States, $8.00; Canadian, $9.00; foreign, $10.00. All foreign subscriptions payable in United States currency or equivalent in foreign currency computed in current exchange. Price this issue, 50¢ per copy.

Copyright 1943 by Breskin Publishing Corporation. All right sreserved including the right to reproduce this book or portion thereof in any form.

Printed in U. S. A. Acceptance under the Act of June 5, 1934, at Easton, Pa. Authorized October 7, 1936.

ANOTHER REDINGTON CONTRIBUTION TO VICTORY

. . . via these Gun Boring Lathes



The Feed Box above *seems* like a very simple thing but it's another *intricate* mechanism that Redington has been asked to produce.

The box consists of a heavy casting and a plate that must be *machined* all over and scraped in. There are gears in that box—some of them hardened and ground—a solenoid operated clutch mechanism—speed change shifter parts—anti-friction bearings—parts held to the *closest tolerances* . . . a mechanism that must be *right* to do its important job.

That Job is to feed in the boring bar on a lathe that bores out the muzzle of a gun and *after* cut is taken, to *reverse* direction and get bar out again quickly, ready for the next cut.

Here is another example of *newly acquired skills* . . . a change from *custom* engineering and machine building to *quantity* and quality production. Redington's newly acquired skills will be invaluable in turning out "the packaging machines of tomorrow."

F. B. REDINGTON CO. (Est. 1897) 110–112 So. Sangamon St., Chicago, Ill.

For Freedom's Sake — Buy War Bonds

REDINGTON

PACKAGING MACHINES

FOR CARTONING • WRAPPING • SPECIAL PACKAGING

THE AMERICA OF TOMORROW!

AMERICAN boys are fighting all over the world to clear the skyways so that they will become peaceways again! The air will be the skyway of the future . . . today's engineering genius has seen to that! And so it is with Sefton Fibre Can Company designers! They, too, are planning . . . creating . . . for that day to come when sunshine will replace the clouds in the skies. They will be ready to serve you in dozens of excitingly different ways to make your life . . . and business . . . more successful in the America of tomorrow!

SEFTON FIBRE CAN COMPANY

Plants — St. Louis, Missouri • New Orleans, Louisiana

DISTRICT OFFICES: Los Angeles, San Francisco, Denver, Tampa, Chicago, Des Moines, New Orleans, Boston, Detroit, Kansas City, St. Paul, Omaha, New York, Cincinnati, Cleveland, Oklahoma City, Pittsburgh, Memphis, Nashville, Dallas, Houston, Salt Lake City, Seattle

A Tale of Two Oranges

—with a postwar hint to packagers

THE TEST. Two groups of choice oranges from the same grove were stored in the same place, at room temperature, for four months. One group was sealed in individual wrappers of Goodyear's moisture-air-tight Pliofilm. The other group was unwrapped. The photographs above show what happened.

THE OFFICIAL REPORT, from the Agricultural Experiment Station of the University of Florida which made the test: *"The oranges wrapped in Pliofilm lost less than 2% of their initial weight after four months' storage...the original taste and appearance of the fruit were unchanged . . . Vitamin C content very slightly diminished."*

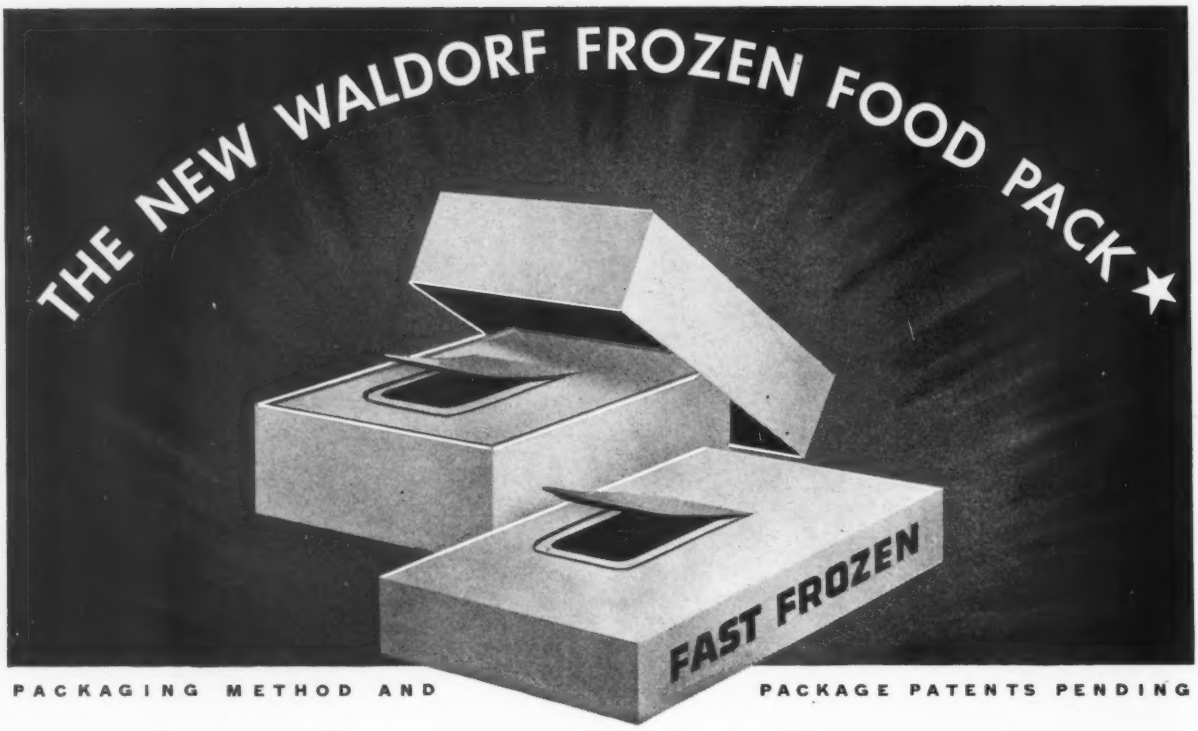
Comparable results have been obtained in tests with grapefruit, lemons, apples, peaches, mangoes and many vegetables!

THE SUGGESTION. While Pliofilm is not available now (today it is a 100% war worker), marketers are invited to consider Pliofilm as a quality safeguard in postwar packages because the enduring "keep fresh" protection of Pliofilm functions equally well in packaging cheese, meat loaf, sausage, coffee, nuts, pharmaceuticals, chemicals and other air-moisture-sensitive products. Write: Pliofilm Sales Dept., Goodyear, Akron, Ohio.

GOODYEAR
THE GREATEST NAME IN RUBBER

Pliofilm

Pliofilm—T. M. The Goodyear Tire & Rubber Company



PACKAGING METHOD AND PACKAGE PATENTS PENDING

...developed in accordance with Waldorf policy for making replacement packages do a better job than those replaced . . . this package is meeting the need of the frozen food industry throughout the nation. To these packages we proudly affix the label of . . .

WALDORF PAPER PRODUCTS COMPANY

SAINT PAUL, MINNESOTA

"WHOSE BUSINESS IS THE DEVELOPMENT AND PRODUCTION OF GOOD PACKAGING"

★ Winner Medal Award — Folding Paper Box Association of America Competition — March 4, 1943

. . . for the future coffee package

(And don't go away just because you don't pack coffee)

What makes a good cup of coffee? More than a good blend. The coffee must be fresh and must be used in the right amount.

Here's how that better cup of coffee may reach you someday, after the war, in Alcoa Aluminum Foil: You will buy it by the pound, but in an inexpensive folding carton. Inside will be inexpensive packets made of heat-sealed aluminum foil, each one containing just enough for a serving.

What's the advantage? Every packet-full is kept roaster-fresh right up to the coffee pot. Heat-sealed aluminum foil holds in all the natural oils, strength and aroma even after the carton is opened.

This idea is not pure Imagineering. Alcoa Aluminum Foil packets were used for soluble coffee before war came and are now further proving their value in Ration K kits for the armed forces. Adapting them to ground coffee will be simple.

If you don't pack coffee, you may have questions about other applications of heat-sealed Alcoa Aluminum Foil. The place to write is ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh, Pennsylvania.

Aluminum is a natural protector

Alone, or in combination with other materials, it excels in preserving freshness, flavor, volume, aroma and color of products that are sensitive to air, light, heat, and gain or loss of moisture. Its sparkling beauty makes a handsome package, too.

Think of ALCOA ALUMINUM

when you think of tomorrow's packages

*Three Men with a Common Faith...

THEIR bodies were lowered . . . to rest in the friendly earth under the Caribbean sky. The lieutenant from Erwin, Tennessee—the machinist's mate from Waukegan, Illinois—the aviation ordnanceman from the Bronx, New York. Their squadron stood at attention.

Over the body of one, a Protestant minister read the burial service. Over the body of another, a Catholic priest intoned a requiem. Over the body of the third, a rabbi recited the Kaddish.

They had served together in the Navy. They flew together, they fought together, they died together. A few hours before their patrol plane crashed into the harbor of San Juan, they sat around swapping jokes—then talking quietly of home. They were buried together.

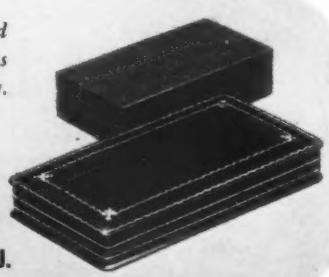
Three patriots who represented with honor their 130,000,000 constituents at home. Three fighters who died that democracy might live. Three airmen who even in death hurl bombs at bigotry and intolerance. Three heroes—blood donors to civilization! Let us vow to keep their spirits alive. Let us bow our heads for three men—Protestant, Catholic, Jew—three Americans with a common faith in the dignity of man and the brotherhood of peoples.

**The names of these heroes appeared in the original news release in the New York Times of January 7, 1943.*

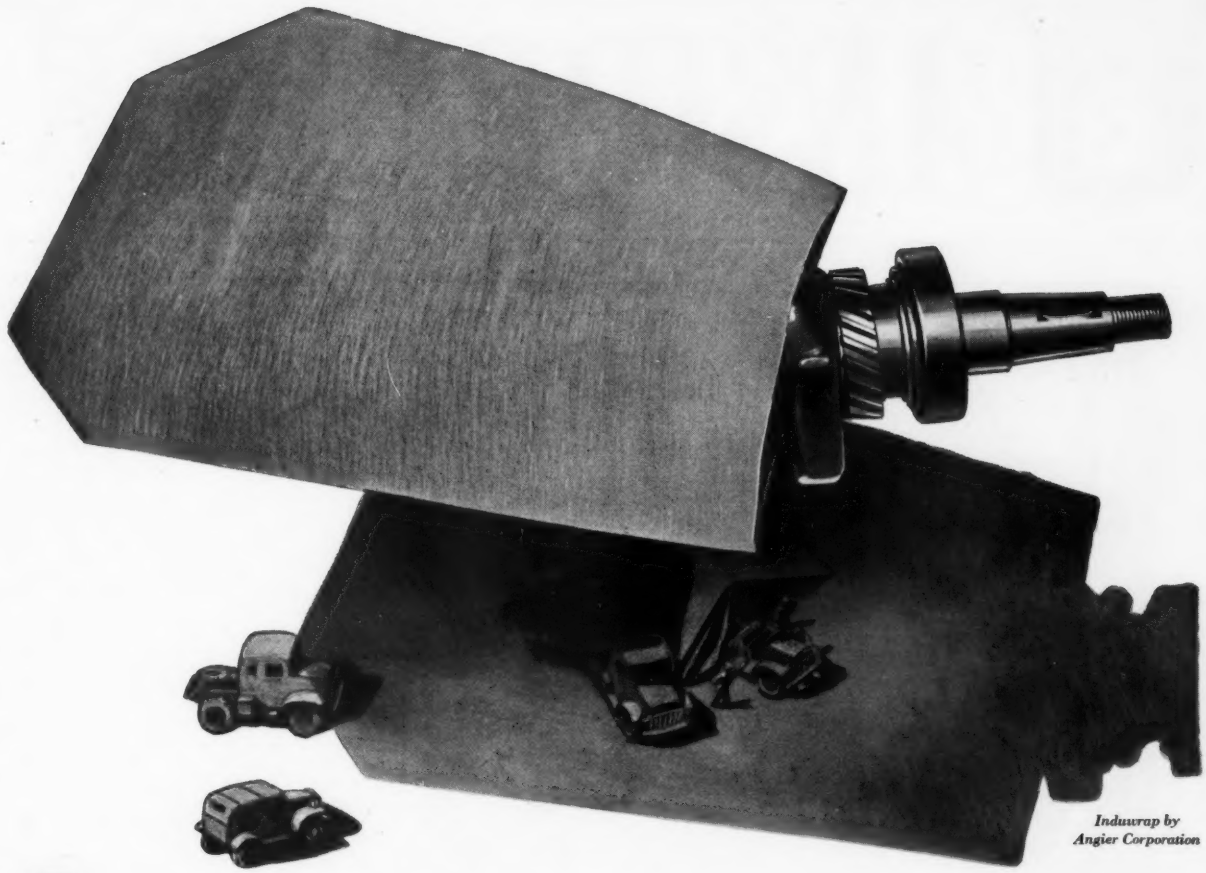
One of a series of editorials published in the interest of the War Effort. Back up our heroes! Buy more Bonds!

Arrow is proud that its facilities have been enlisted by the Army and the Navy to make many of the boxes which hold the medals for heroes of democracy.

Arrow BOXES AND DISPLAYS



ARROW MANUFACTURING COMPANY, INC., 15th and Hudson Streets, Hoboken, N. J.



Induwrap by Angier Corporation

Teamwork's Bag of Tricks

For the protection of semi-finished and finished ordnance general supplies, Uncle Sam demands a material that is a barrier against dust, water, grease, oil, moisture, corrosive media . . . against disturbance of corrosion-preventive treatments. This—and more—for supplies to be shipped to the ends of the earth. Impossible? Specifications too tough? Certainly—for any one material! But teaming-up the outstanding qualities of several materials does the trick . . . licks tough, exacting specifications.

The success of this new development of the packaging industry is amazing. And Lumarith is contributing its outstanding qualities to many applications . . . usually, as an oil, grease and water barrier, although often as much more. The packaging industry knows that Lumarith can be counted on to contribute these qualities: it is proof against water, grease, oil, germs—does not dry out, shrink, become brittle—is not affected by extremes of humidity and temperature—protects against mold—is non-corrosive.

For packaging ordnance supplies, food, equipment, the demand for laminated combination material is enormous. And this need will increase . . . the call will be for greater quantities . . . for ever-widening applications. Celanese Celluloid Corporation, 180 Madison Avenue, New York City.

LUMARITH

REG. U.S. PAT. OFF.

Plastics for Packaging

CELANESE CELLULOID CORPORATION

The First Name in Plastics

A DIVISION OF CELANESE CORPORATION OF AMERICA

INSIDE NEWS

MAY PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1943

A "ribber" separating the forequarter of beef from the hindquarter in a packinghouse cooler.

Cold Storage Destroys Parasitic Infections in Meat

Some States Make Freezing a Regulation in the Preparation of Meat Products

Freezing at 5° below zero for 20 days destroys parasitic infections in meat which cannot be detected by ordinary inspection, according to a recent report to the American Chemical Society. Tularemia, or deer fly fever, in rabbit meat and trichinosis in pork can be controlled by freezing at proper temperatures. Thereafter the meat is kept in cold storage under controlled temperatures until it reaches the consumer.

In Massachusetts wild rabbits are free from the disease of tularemia and the Department of Conservation has a regulation quarantining imported live rabbits before they are liberated. Moreover, carcasses of rabbits shipped from other states into Massachusetts must have been kept in cold storage at a temperature of less than 30° F. for a period of not less than 30 days.

All trichinae is destroyed in pork if the product is frozen for 20 days at 5 degrees below zero. However, only the commercial meat packing houses have the equipment to safely perform this freezing operation. No system of inspection can guarantee pork to be free from this parasite. Every householder, to be safe and to develop the best flavor in fresh pork, should cook the meat until the red color has entirely disappeared. In human beings trichinosis is usually confined to those races who prefer to eat their pork under-cooked.

Among the regulations of the U. S. Bureau of Animal Industry, as well as those of the states of New York and New Jersey, governing the preparation of meat products, freezing is of paramount importance. In a sense, however, the state regulations are experimental in nature. If they prove to be of definite value as a public health safeguard, the freezing regulations will mark a big step toward ultimate control of trichinosis in this country. (357)

'Gross' vs. 'Net' Income

At last American business is beginning to think with its head! Witness the Johns-Manville Corp. Advertisements telling the public, its customers and employees what the company's balance sheet shows for the first full year of wartime operation.

Gross income $108,500,000. Salaries and wages $37,000,000. Taxes $16,500,000. Other costs of doing business $49,500,000. Rainy-day reserves $3,500,000. Dividends $2,000,000.

What a different picture that is from the one conjured up by the demagogue who only refers to "gross" income and ignores the "net"—the figure which tells the real story.

Johns-Manville had a large total (gross) income but the breakdown shows 34 per cent going into pay envelopes, 15 per cent to the tax collector, and only 2 per cent to the stockholders whose ventured capital made the business and the pay roll possible.

As other corporations see the wisdom of going to the public with this sort of proof that the profit has been taken out of war, distortion of the American business picture by demagogues, politicians and soap-boxers will become more of a chore. (338)

—Reprinted through courtesy of New York World-Telegram and Johns-Manville Corporation.

New Paste Scouring Agents

To replace steel wool and soap scouring pads, now banned from the market by war needs for steel, a new type of paste scouring soap packed in wide-mouth containers is being offered.

These scouring pastes are similar to ordinary mechanics' paste hand-soap except that they are firmer and carry a higher percentage of abrasive. The abrasive used is coarse powdered pumice, comprising 35 to 45 per cent of the paste, along with 25 to 30 per cent of soap and a small percentage of sodium silicate and glycerine substitute. The new pastes are designed to replace the steel wool pads in scouring pots and pans in homes and restaurants. (339)

Canned Mussel for Lend-Lease Shipment

The sea mussel seems destined to become popular here as the nation looks for more food resources, according to the Office of the Coordinator of Fisheries. Closely related to both the oyster and the clam, the mussel can be used and cooked in the same manner. Its flavor, which will be at its peak until June, is something like that of the longneck clam.

Maine, Massachusetts and Rhode Island have considerable resources of this excellent seafood and it is probable that a million bushels will be taken this year. Mussels have always been popular in Great Britain and one canning company here has been experimenting recently with canning them in the United States for possible lend-lease shipment to England. (340)

NATIONAL CAN

PLANTS: NEW YORK • BOSTON • BALTIMORE • CHICAGO • HAMILTON, OHIO • FORT WAYNE, INDIANA

New Product for Organic Syntheses

Diphenyl sulfone was recently offered as a new product by a large American chemical manufacturer.

Characteristics of the compound are said to suggest its use as an intermediate in organic syntheses or in the preparation of diphenyl sulfides, selenides and their derivatives. It is slightly soluble in hot water and soluble in most of the usual organic solvents.

Laboratory quantities are available in a technical, grayish white powder with a melting point of 120-125° C.; and a pure grade consisting of white crystals and having a melting point of from 127-129° C. (341)

Looks Innocent Enough —But it Packs a Wallop!

The standard one-gallon can, so widely used in the paint and chemical industries, is now serving the United Nations on world battle-fronts as an important part of certain types of land mines. It is but one of many essential wartime containers being produced in quantity by National Can Corporation.

U. S. May Become a Leading Cheese Exporter

Prior to the war American cheeses were little known outside the United States, but at present they are going abroad in staggering quantities. In 1939 our exports of all types of cheese were less than 1,500,000 pounds. In 1943 274,000,000 pounds of American cheddar cheese alone is expected to be shipped to the Allied Nations.

American dairy farmers and packers have reason to believe that this global distribution will result in widespread acceptance of American cheeses after the war. (337)

Technical Topics

CAT-TAIL DOWN—Down from the common cat-tail makes a stuffing floss comparable to Kapok, formerly imported from Java. A pilot plant in Wisconsin is already using large quantities of cat-tails from nearby marginal farm swamp land. (342)

WEED KILLERS—The use of catalysts to increase the destructiveness of weed killers has been tested by an English railroad. Using a mixture of sodium chlorate and calcium chloride, various catalysts were added. In all cases the lethal effect of sodium chlorate was increased, vanadium pentoxide appearing to be the most powerful catalyst. (343)

BLACK COTTON, according to a Soviet embassy bulletin, is a new variety which eliminates the necessity of using black dyes to color the fibre. In this country considerable research has been devoted to the possibility of raising different shades of plants by chemical treatment of the soil or the sap of such plants. (344)

ALCOHOL from wood is a new American industry. Alcohol was once made in this country from the waste sulphite pulp of paper mills, but discontinued because of high cost. The new process produces ethyl alcohol at a lower cost than present methods which use grain. (345)

TUNG OIL SUBSTITUTE—A substitute for tung oil, with excellent properties as a drying oil, has been found in a tree growing wild in Mexico, which estimates indicate can give a yield of 1,200 tons a year. A fatty acid extracted from this oil has additional value for candle making. (346)

NEW INSECT INGREDIENT—There is renewed interest in sabadilla as a raw material for the manufacture of insecticides because of the acute shortage of pyrethrum, derris, cube, etc. A process for use of sabadilla has been worked out and will be offered commercially by the Alumni Research Foundation of a mid-western university. (347)

MANILLA FOR ROPE—Several hundred acres a week in Panama and Costa Rica are being cut from the jungle and seeded to Manila fibre plants as a step toward filling the United Nations' need for rope. (348)

SUBSTITUTE FOR CASAVA—Eastern Colorado farmers this spring can aid in the war by growing leoti sorghum as a substitute for Casava, starch-bearing plant of the Orient from which tapioca is made, or as an excellent feed for livestock. (349)

CHEMICALS INCREASE GUM FLOW OF PINES—The labor shortage and the urgent need for production of more rosin and turpentine for war uses focus attention on the discovery by the U. S. Forest Service that 40 per cent sulphuric acid solution or a 25 per cent solution of caustic soda (lye) will greatly increase the gum flow of both longleaf and slash pines. (350)

ABACAXI SACKS—Abacaxi fibre is being used in Brazil for production of sacks, according to a Brazilian publication. It is claimed that abacaxi is stronger than jute and has given excellent results in the manufacture of sacking material. (351)

BUTYRALDOXIME is being offered in semi-commercial quantities by an American manufacturer for practical plant development of its reactions. Suggested uses are as a solvent, antioxidant and in organic syntheses. Homologous oximes are also said to be available in sample quantities. (352)

HAY FEVER—Vitamin C has been suggested for the treatment of hay fever in a recent report of investigations carried out at a mid-western college. Noting the low levels of vitamin C during hay fever, sufferers were given vitamin C in an effort to bring the body content to normal. The experiments recorded a distinct gain with eighty-eight per cent of the patients. (353)

CHEMICAL SMOKE—Perchloroethylene is the basis of a chemical smoke screen developed by an American manufacturer. The fluid, once used extensively for dry cleaning, is converted into hexachloroethane which reacts vigorously with fine metallic zinc to form zinc chloride. During the reaction there is liberated a large quantity of heat which evaporates the zinc chloride and produces a dense cloud of white smoke. (354)

CHROMIUM FLUORIDE AND FORMALDEHYDE have been found in Russian investigations to preserve industrial wool textiles against bacterial degradation. Potassium bichromate and barium fluosilicate could be substituted for the chromium fluoride it was declared. (355)

REPLACEMENT FOR CHLORINE—Ethyl mecuric compounds have been found suitable as replacements for chlorine in the prevention of mold in ground wood pulp during storage, and for addition to pulp while in the beater to prevent formation of slime on the paper making machine. (356)

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquiries to the original source of the article. Write to National Can Corp., 110 E. 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

(Advertisement)

In Plenty, think of Want...
In Want, do not presume on Plenty

Sharing our "plenty" need not cause us "want" according to an ancient Chinese proverb. But the pinch of rationing is awakening all America to the importance of avoiding *waste.*

This is particularly true of food products, for every possible precaution should be taken to avoid wasting food.

Whether you use Riegel's or some other good competitive paper is not of vital importance today. The essential point is that your package must provide sufficient protection to eliminate any possibility of spoilage. A package that would do this yesterday may not do it today — when deliveries are slower and the time of final use is often uncertain.

If these changing conditions have created new protective packaging problems for you, we will be glad to try to help you solve them . . . even though paper production has been "frozen" and most of our papers are no longer available in unlimited quantities to one and all.

RIEGEL PAPER CORPORATION
342 MADISON AVE • NEW YORK

83A

what's a standardized packers' jar got to do with a FIGHTING MARINE?

It permits mass production, so that food may be available for the armed forces and the great army of workers on the home front. Standardization has released valuable metals and other necessary materials so that they may be used for victory. • Hazel-Atlas is proud to use its facilities in the production of these standardized glass containers.

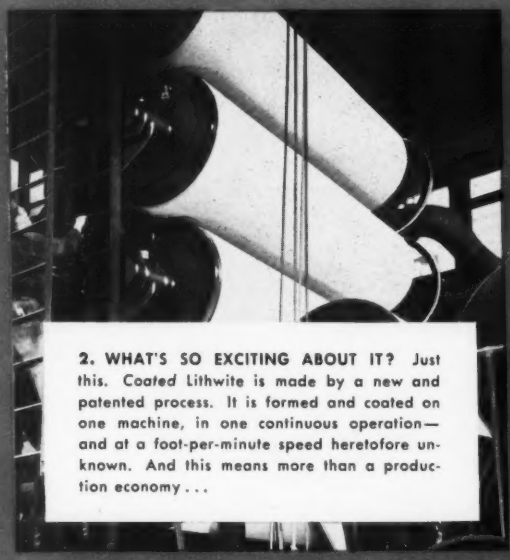
HAZEL-ATLAS GLASS CO.

WHEELING, W. VA.

You're looking

1. HERE ARE THE TWO WINNERS in the 1942 All-America Package Competition—and behind the sparkling printing of these Spud and Fleetwood folding cartons, is another winner. It is *Coated* Lithwite, the exciting new paperboard development announced to the world a little over two years ago.

at 3 winners!



2. WHAT'S SO EXCITING ABOUT IT? Just this. *Coated* Lithwite is made by a new and patented process. It is formed and coated on one machine, in one continuous operation—and at a foot-per-minute speed heretofore unknown. And this means more than a production economy . . .

3. FINER PRINTING ON A FINER SURFACE. The secret mineral coating is applied with such velvety smoothness, that printing results are unusual. Inks lay more evenly—come up with greater brilliance. Type, zincs and halftones print crisper, cleaner, sharper on this finer, whiter paperboard. And that's not all . . .

4. COATED LITHWITE FOLDS AND SCORES without shattering. Seals more positively in high-speed automatic filling and sealing machines. For color, stiffness and tear—for printability—for quality look and feel—point for point, *Coated* Lithwite adds up to an unusual paperboard. A prize-winner in its field!

RIGHT NOW, UNCLE SAM is our No. 1 customer. His needs get priority in our plants. But if you would like to examine printed samples of *Coated* Lithwite for consideration when times are normal again, we will be happy to forward them to you.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

GARDNER-RICHARDSON — FROM PULP TO FINISHED PRODUCT — ENGINEERED PRECISION

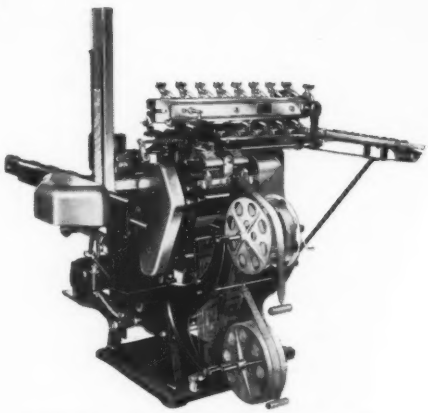
Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT

90 to 120 Units per Minute

Our huge allied nations army will demand a tremendous supply of army field rations. Help supply this demand by wrapping your bars the Wrap-O-Matic way. Wrap-O-Matic will help speed up your production and at the same time save vital materials and labor . . . savings in materials up to 35% and in labor up to 75% . . . a vital factor in today's material and manpower shortage. Wrap-O-Matic wraps at high speed (90 to 120 units per minute), with or without liners, and uses any wrapper that can be printed in rolls.

Speed up your production of K1's—K2's—fruits bars, chocolate bars and candy bars for our fighting men, the Wrap-O-Matic way.

Investigate Wrap-O-Matic . . . accept our invitation to have our engineers survey your wrapping problem. Write today for details of how Wrap-O-Matic will increase your production.



Wrap-O-Matics are built in 2 basic models —Side-intake (illustrated) for feeding directly from enrober belt . . . straight-intake especially designed for 2 or 3 piece bars.

LYNCH Manufacturing Corporation, Defiance, Ohio U.S.A.

WRAP-O-MATIC DIVISION

The war invention 500 years old

Have you heard about our tanks firing "tin cans" at the enemy?

It's an old trick, invented long before Columbus discovered America. The can, filled with deadly steel balls, is fired from a standard 37-mm. tank gun.

And here's what happens: The can (called "Canister") bursts in mid air after traveling maybe 30 yards. It scatters steel slugs in all directions. Masses of enemy ground troops are put out of action by a *single shot!*

How many millions of metal containers are going to war like this? The number is secret. But you know it must be huge, because you can't get beer cans, coffee cans and certain others for civilian use.

The can, America's favorite container, is racing off production lines to be filled with food, oil and other essential supplies.

It will be knocked around. Dropped from planes to beleaguered forces. Exposed to heat, light, dirt . . . and who knows what else? But no matter. It will get there—*safe.*

And when the can comes marching home, it will be better for the experience our laboratories and factories have gained as wartime "Packaging Headquarters for America."

ARE YOU MAKING WAR PRODUCTS?

Metal containers are delivering the goods *safely*—foods, supplies, and bullets arrive ready for action. Continental is making millions of these cans along with other war needs, including plane parts.

Yet, rushed as we are, we can still take on more! Right now, a part of our vast metal-working facilities for forming, stamping, machining and assembly is still available. Write or phone our War Products Council, 100 East 42nd Street, New York.

It gets there-safe-in cans

CONTINENTAL CAN COMPANY

TO HELP CAN THE AXIS—BUY WAR BONDS

But Not Good Enough Today

STANDARDIZE NOW *on Kimble Ampuls, Serum Vials, Serum Bottles and Clinical Glass containers of* NEUTRAGLAS.

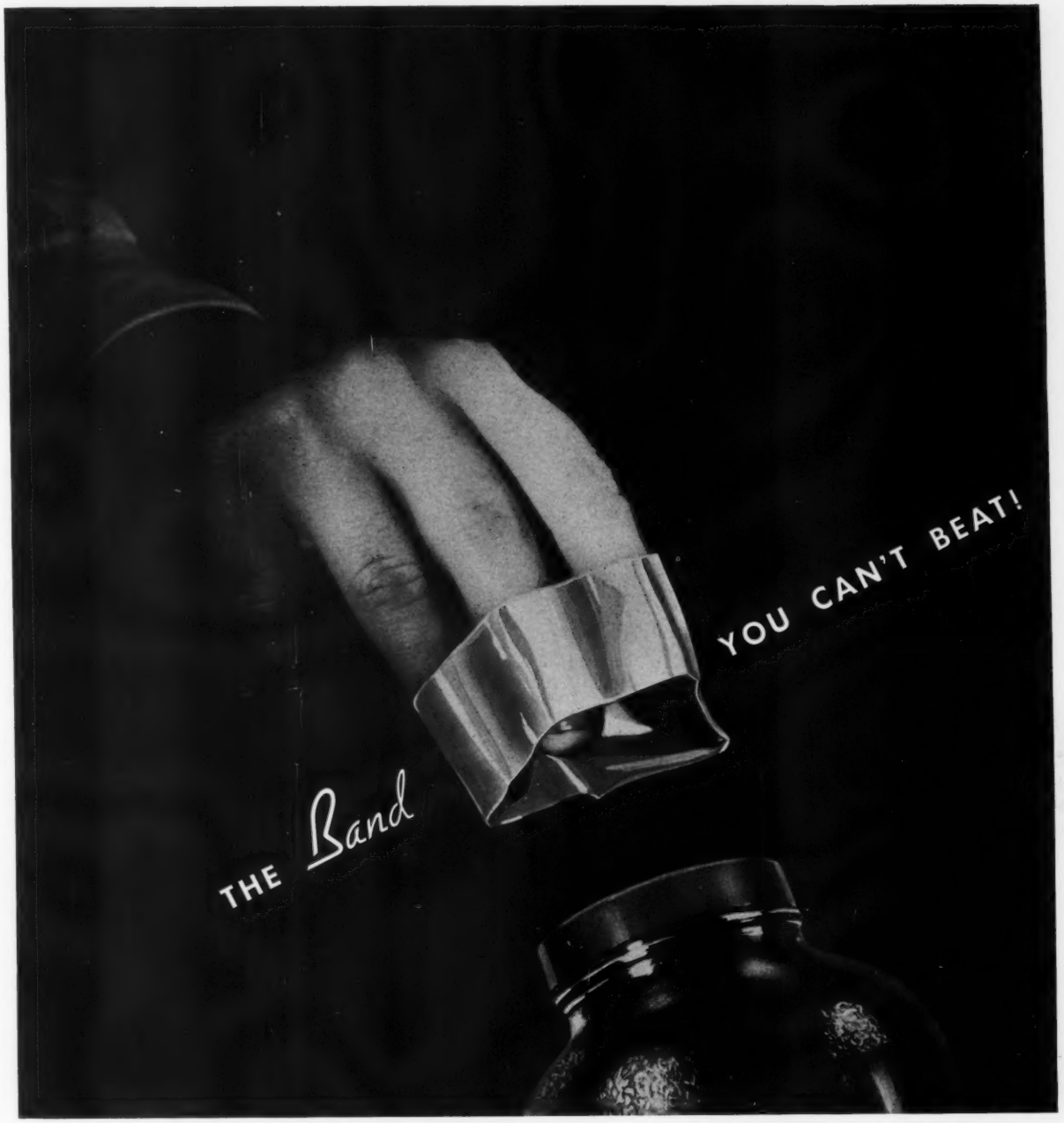
The early models of the Wright brothers made history. But they are hopelessly obsolete compared with the improved aircraft available today.

NEUTRAGLAS . . . offering the highest known resistance to solvent action and chemical attack . . . was developed by Kimble because no glassware can be just "good enough" if better is obtainable.

• • • *The Visible Guarantee of Invisible Quality* • • •

KIMBLE GLASS COMPANY . . . . VINELAND, N. J.

NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO



SYLPHSEAL* Bands are the perfect accessory closure for coffee jars. Easily applied without special machinery, they quickly shrink to fit and afford tamper-proof protection. Available in both wet and dry form and in a wide range of sizes, styles and colors.

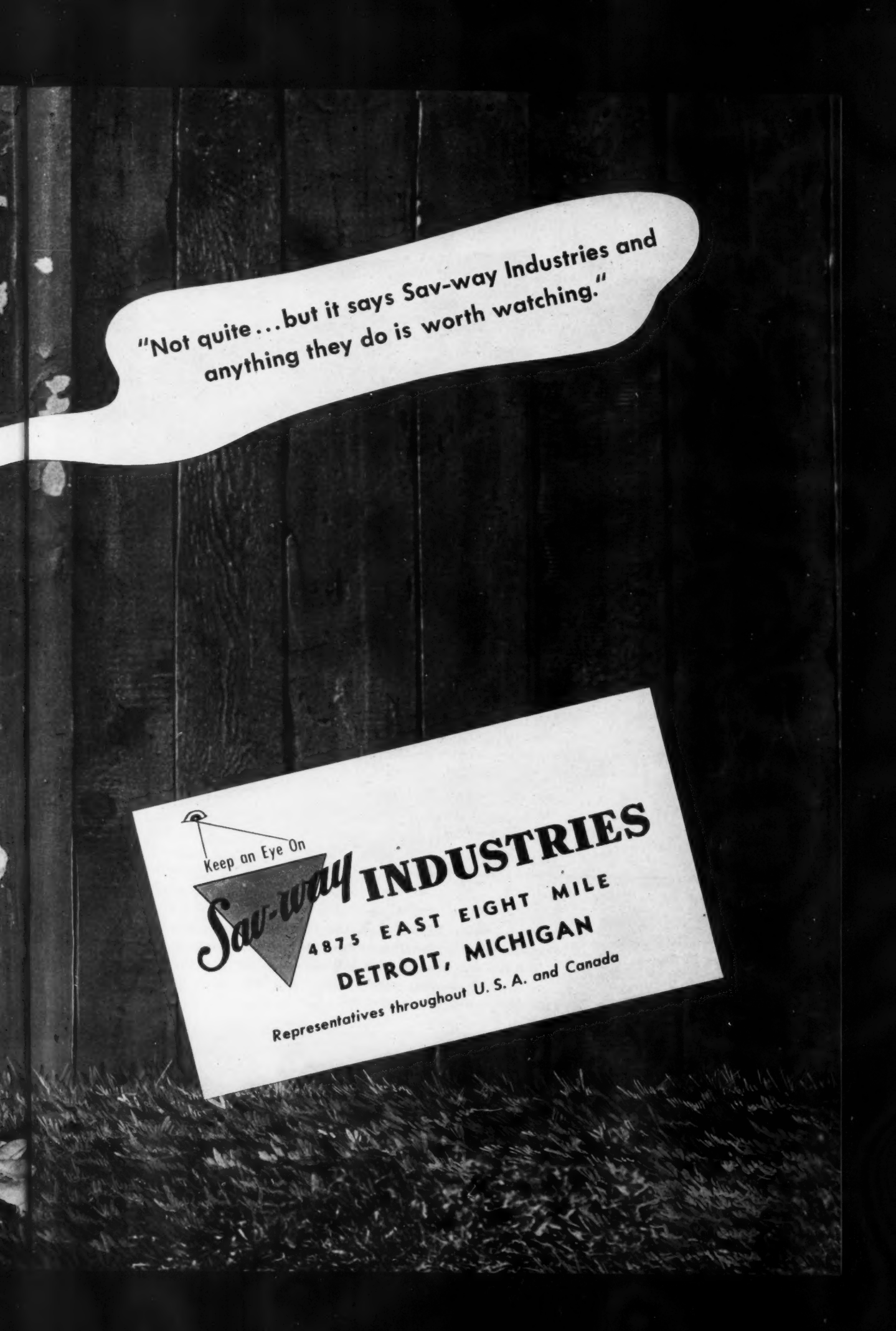
SYLPHSEAL* SYLVANIA Bands

Buy U. S. War Bonds and Stamps
. . . Today and Every Day!

SYLVANIA INDUSTRIAL CORPORATION
General Sales Offices: 122 East 42nd Street, New York City
Works and Principal Offices: Fredericksburg, Virginia

*Reg. U.S. Pat. Off.

"Can you see what's inside?"


"Not quite...but it says Sav-way Industries and anything they do is worth watching."
Keep an Eye On
Sav-way INDUSTRIES
4875 EAST EIGHT MILE
DETROIT, MICHIGAN
Representatives throughout U. S. A. and Canada

" . . . you'll find it WONDERFUL SOUP!"

Dear Jim:

Hope you recognize the soup in your emergency ration kit.

Remember? We were working out the package when you put on your uniform. Well, the soup got there almost as soon as you did ... and you'll find it wonderful soup!

That little packet of powder may be worth a lot more to you, some day, than a belt full of money. The package is something special. The G. I. men didn't use these words, but the package had to be ...

strong as Gibraltar
tough as a leathernecks
airproof as a blimp
moistureproof as a torpedo
light as a feather
gasproof — corrosionproof
tasteless and odorless

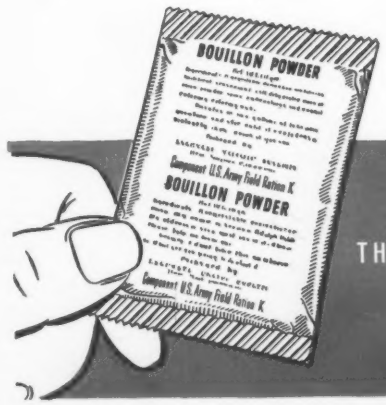
And so, we did it, just as they said. Now, when you have to get your own soup, sometime, in a jungle, or desert, or on a glacier, you'll have soup ... real soup ... from that little package.

When the shooting's over, you're coming back to an exciting new world. Our research men are doing some startling things for war that will be just as practical in peacetime. They'll be ready for the problems of postwar packaging, with many new methods, materials and techniques. We're hearing about some of these future problems, already.

So give the enemy the works, and get him handled. Write when you can. We'll keep you posted on the "home front". All the folks send their best to you.

Yours,

T. F. Dolan
President



Printed "TRITECT" laminated cellophane packages protect taste and quality of this soup ration—loaded and sealed on Trans-wrap equipment. This is a typical example of Dobeckmun service in designing packages to meet specific requirements. If we can help you in your packaging problems, please call upon us.

THE DOBECKMUN COMPANY

CLEVELAND, OHIO · OAKLAND, CAL.

Selecting a package. There's a lot more to it than meets the eye. There are a lot of containers of different styles and capacities—narrow and wide mouth rounds, blakes and ovals for example—in crystal or amber glass. The product, its selling price, production limitations, market, and end use—all play an important part in selecting the container best suited for your product.

It's the same with closures. Liners, too. The product itself—and its chemical and biological characteristics—sets the pace. Maybe it needs an airtight, leakproof seal. Or one that will vent at predetermined pressure. Or one that can be removed and reapplied time and again, with no loss of product efficiency.

That's why we don't guess. Why we want to *know* your product before making recommendations. Then—and only then—can it be properly packed.

EDWARD L. KNISELL, one of Anchor Hocking's ablest and most popular men, has been a member of the Anchor Hocking family for 25 years.

ANCHOR HOCKING

GLASS & CAPS

ANCHOR HOCKING GLASS CORPORATION · LANCASTER, OHIO

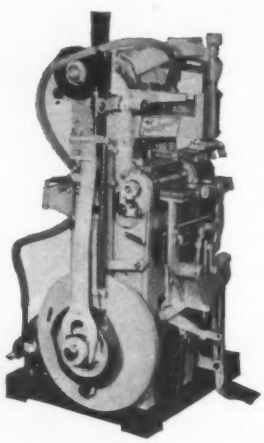
When you DO convert to "GLASS PACKS"

Do it with Guaranteed LABELRITE advantages!

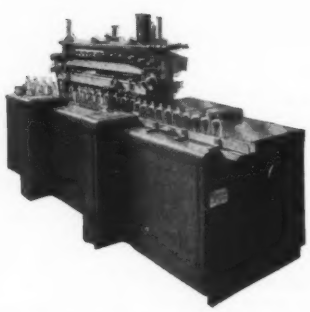
YOUR trail ahead has been proven by countless manufacturers of Foods in glass, using Labelrites on many sizes and shapes!

DON'T WORRY ABOUT HELP *when you run* LABELRITES

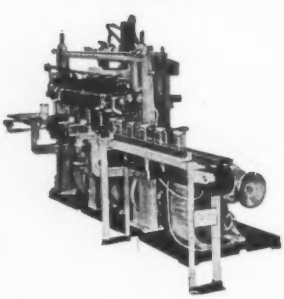
Fully automatics, like those shown in the small cuts below need NO constant attendant. The Pony Labelrites can be operated by unskilled—*easy to-get* operators!



- *LOWER OPERATING COSTS*
- *POSITIVE PRECISION*
- *NO WIPING OF BOTTLES*
- *PETTY-CASH CHANGE PARTS*
- *SIMPLICITY OF OPERATION*



Pony Labelrites, like the one shown at left have a capacity of 50 to 100 per minute. Fully automatics are now handling glass packed items at 120 or more per minute. ALL Labelrites have a self-cleaning feature, with built-in fool-proof features. ONE unit is capable of handling a number of sizes of labels OR containers.



Get FACTS—and you'll get Labelrites!

NEW JERSEY MACHINE
CORPORATION
1600 Willow Avenue . . . Hoboken, N. J.

Chicago Office: 325 W. Huron Street

WAR BROUGHT the need for many packaging short cuts.

Substitutes and changes have lowered the cost and in not a few instances have increased the utility of many well-known packages.

Such have been the results of Ritchie's experience making vast quantities of special packages for war needs.

We have designed new machinery, developed new methods, and in some cases new materials. Our facilities, and those of other leading package manufacturers, have been taxed to the utmost.

Our plans are formed already for making these advantages and economies available to private business as quickly as time and the lightening of war needs permit. We venture the opinion that there will be a great swing to re-styled packaging in the post-war period. More practical packages. Conserving materials—and cost. Available manufacturing facilities may prove inadequate to fill the large backlog of accumulating needs.

It's not too early to be thinking about the new packages *you* will require for those new, war-developed products of your own. Not too early to think about re-styling and economizing *present* packages.

Ritchie packaging engineers and designers will be glad to help you—***now.*** Their services are available without cost, without obligation and without thought of gaining immediate business. Start planning for tomorrow's needs —today—with Ritchie.

W. C. Ritchie AND COMPANY

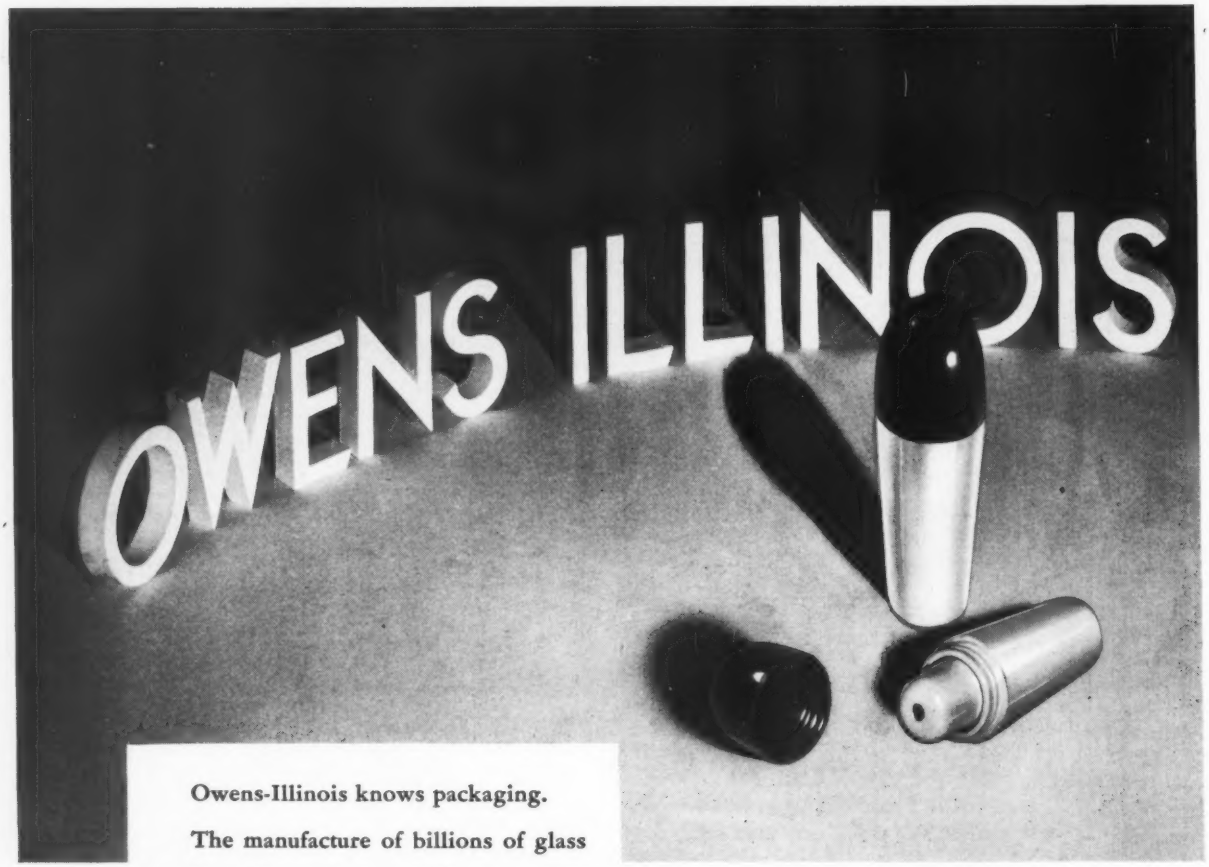
8844 BALTIMORE AVENUE • CHICAGO

SET-UP PAPER BOXES
FIBRE CANS
TRANSPARENT PACKAGES

NEW YORK DETROIT LOS ANGELES ST. LOUIS MINNEAPOLIS DENVER MIAMI

Plastic Packaging

IS OUR NATURAL ASSIGNMENT



Owens-Illinois knows packaging.

The manufacture of billions of glass and metal containers qualifies us to cope with a myriad of packaging problems. The Owens-Illinois Packaging Research Laboratory is the largest of its kind.

Owens-Illinois knows plastics. Our plastics experts have molded complete packages of plastics . . . and millions of plastic parts for containers.

Our accomplishments in the packaging field are based on this broad background of experience, plus modern facilities. Today's production is, of course, devoted to high priority orders. But, in the post-war period, it is natural that industry will look to Owens-Illinois for *packages of plastic.*

OWENS ILLINOIS

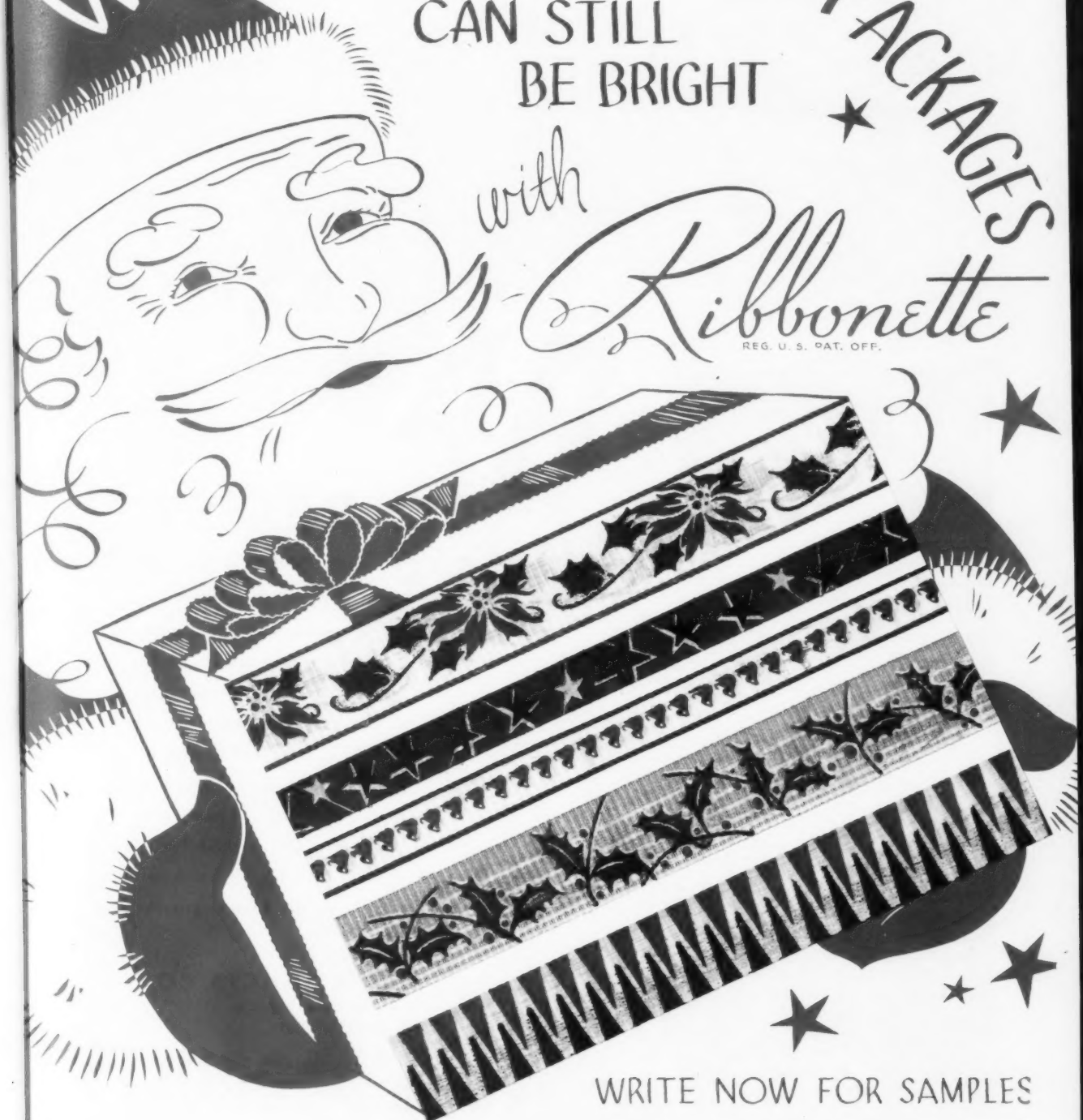
PLASTICS DIVISION . . . OWENS-ILLINOIS GLASS COMPANY, TOLEDO, OHIO

WAR TIME CHRISTMAS PACKAGES

CAN STILL
BE BRIGHT

with Ribbonette

REG. U. S. PAT. OFF.



WRITE NOW FOR SAMPLES

CHICAGO PRINTED STRING CO.

2300 LOGAN BLVD.
CHICAGO, ILL.

225 FIFTH AVE.
NEW YORK, N.Y.

BAGS TO RESIST "AIR ATTACK"

VARIED BAGS *for* VARIED USES

Laminated Cellophane Bags, heat-sealing, have exceptional protective properties. The Army 5-in-1 Ration, Ration "K", and dehydrated foods for Lend-Lease are hard-to-keep products packaged in these bags. A 2-ounce laminated bag of *Cellophane and Glassine* is used to carry soup mix in a special American Red Cross Package—ideal for safe shipments of food concentrates and powders in small units. Two special laminations, *Cellophane-Glassine* and *Cellophane-Kraft*, are doing special bag-packaging jobs for the Quartermaster Dept. and the U. S. Dept. of Agriculture. Millions of pounds of frozen foods this year will be protected by another Menasha bag — *high wet-strength stock*, a *special coating* for protection, heat-sealing. The range of Menasha's papers, laminations and sizes includes a perfect bag for any number of "problem products."

It is not "coincidence" that Menasha bags are meeting unusual packaging requirements for so many wartime products. This record begins with a skilled technical staff, excellently equipped and fully experienced for package research and development. Flexible production equipment permits work in a great range of papers, cellulose sheets, combinations and laminations, glue and heat-sealed construction. Our booklet "Wartime Packaging" tells much about the "know how" which Menasha has ready to tackle your bag-packaging job. Write for it now.

THE MENASHA PRODUCTS CO.
Division of Marathon Paper Mills Co.
MENASHA, WISCONSIN

MENASHA PRODUCTS
CARTONS, LINERS
BAGS AND OVERWRAPS

HAS THAT BEEN YOUR EXPERIENCE?

"I never did anything worth while by accident," wrote America's great inventive genius—Thomas A. Edison.

Has that been your experience . . . it has been ours.

Thousands of Carr-Lowrey containers, now occupying preferred positions upon the shelves of stores all over the United States, are substantial proof of it.

They are there, not through chance, but because every detail of their production was executed with the utmost precision by practical-minded Carr-Lowrey craftsmen!

We learned long ago that Fortune favors the organization that trusts to Fortune least. Consequently, one of the guiding principles of this company has been to make today's experience improve tomorrow's performance!

With more than 50 years of "know how" behind us, isn't it reasonable to assume that we can meet your particular requirements for glass containers of quality and dependability?

CARR-LOWREY GLASS CO.

Factory and Main Office: BALTIMORE, MD. *New York Office:* 500 FIFTH AVENUE *Chicago Office:* 1502 MERCHANDISE MART

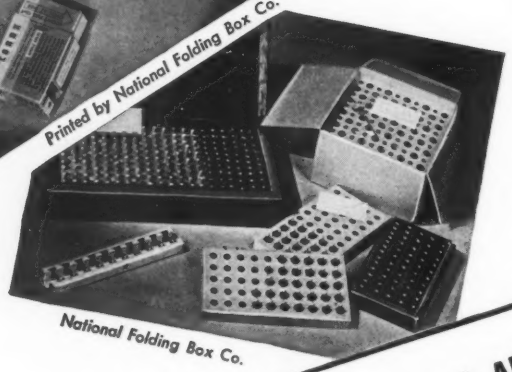
FOLDING PAPER BOX ASSOCIATION WINNERS

Printed by Continental Folding Paper Box Co.

Printed by American Box Board Co.

Printed by National Folding Box Co.

Printed by National Folding Box Co.



National Folding Box Co.

In All the

As in the past the All-America winners shown here used IPI inks. And in the first National Folding Paper Box Association Contest held in Chicago, five out of the seven winners using ink were printed with IPI inks. In all national contests—wherever the leaders in packaging are represented IPI inks are on most of the winning packages.

Year after year, IPI has continued

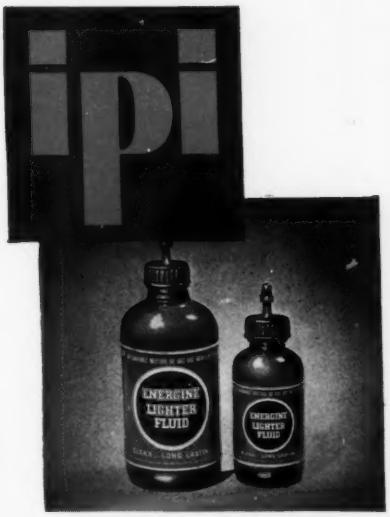
Now **IPI LAMINANTS & ADHESIVES**

IPI, as the leader in the field, always has been in touch with packaging problems and requirements. IPI has devoted a large part of its research program to the development of moisture-resistant and grease-proof laminants and adhesives. Your IPI representative stands ready to give every assistance on package materials—inks, laminants, adhesives.

National Contests Winners Use

to improve its package printing inks to maintain a leadership long held in this field. IPI's comprehensive research facilities have enabled them to develop new formulations and better printing techniques which make possible more attractive, more useful printed packages.

Now, more than ever, this research program is vitally important. Under wartime conditions research must meet new conditions, develop new materials. "Keep in touch with IPI" is a policy which leading packagers and package printers have followed. During the present crisis, this suggestion is particularly timely. Remember that IPI's laboratory technicians are working for you—working to meet the demands of the packaging industry in a wartime economy.



Wheeler-Van Label Co.

INTERNATIONAL PRINTING INK

Division of Interchemical Corporation • 75 Varick Street, New York City

Sutherland Paper Co.

Printed by National Folding Box Co.

Printed by Kindred MacLean & Co., Inc.

ALL-AMERICA WINNERS

NEW ROCKWOOD WAR PACKAGE *wins* FIRST AWARD in COMPETITION

Group 5
CONFECTIONERY PRODUCTS
Folding Paper Box Competition devoted to Conversion Packages which Save Critical Materials for the War Effort

THE new Rockwood package is a creative conversion: it speeds production, reduces manpower, uses non-critical materials and gives more protection and longer shelf-life to the product.

Folding cartons reproduce in color and shape all the external features of the former cellophane bags, no longer available through WPB order L-20.

The green package is for Mint Wafers, the maroon carton holds Rum Wafers and the chocolate-colored container packs Nonpareil Wafers—the three largest sellers in Rockwood's simplified wartime line.

It has been a privilege, indeed, to be able to create Rockwood's packages.

CONTINENTAL FOLDING PAPER BOX CO., Inc.
RIDGEFIELD, NEW JERSEY

MOISTURE
meets its master!

• Moisture...arch-enemy of so many products susceptible to damage by dampness...has no effect on the contents of these kraft paper bags made by Union Bag & Paper Corporation. Their multi-wall construction includes a vapor barrier that is one of the wonders of modern packaging.

Moisture resistance is just an example of the virtues that Union Bag can build into paper packages and containers through Scutan, its special moisture-barrier, water-proofed sheet.

Today, kraft from the South's vast supply of pulpwood is successfully replacing metal, burlap and other scarce materials...meeting specific demands of packaging and shipping in numerous industries...serving, and serving well, in thousands of important tasks.

MULTI-WALL BAG CONSTRUCTION:
Union Bag & Paper Corp. offers highly efficient methods of packaging and shipping agricultural, chemical, fertilizer, food, rock products...affords a decided weight- and space-saving advantage.

IN THE FIELD OF WAR PACKAGING:
Union Bag & Paper Corp. is able to make bags from its wide variety of kraft papers, including those resistant to oil, grease and water, super-strong, non-scuff, flavor-sealing, fold-enduring, and eye-appealing...is able to make kraft containers that have one, or ALL of these important advantages.

Whatever your wartime container or package problem... no matter how difficult it may seem...consult

UNION BAG & PAPER CORP.
WOOLWORTH BUILDING, NEW YORK, N.Y.

KRAFT PAPER—THE SERVICE UNIFORM OF AMERICAN PRODUCTS

"K" ration battles in paper armor

• Next to his rifle, this "Army Field Ration K" is the fighting man's best friend.

It sails down out of the sky with paratroopers. It goes up the beaches with landing parties. It's dropped from planes, dragged through rivers, thrown into foxholes.

Naturally, the "K" ration package must be able to resist practically every known form of destruction. It must protect its contents against impacts big and little, sea-water soaking, heat, cold, insects, rough-and-tumble transport.

And it does. Paper was given the packaging problem – paper did the job.

From paper practice bombs to paper-plastic glider wings, from helmet liners to the top sergeant's roll call – paper is in the fight. Every day, startling new uses for paper are discovered, and new needs for paper appear. The world of paper is not only a rapidly changing world, it is also an expanding world. We are making paper at the rate of a *thousand miles a day*, and we know a lot about the things paper is doing today, and will do tomorrow.

The lights in our laboratories burn late these days, as we search for more ways in which paper can serve the war effort. All our research facilities, and our best engineering talent, are devoted to that end.

When materials are again available, unusual papers for many purposes will be ready for your use. In the meantime, Oxford merchants and Oxford salesmen are at your service.

OXFORD PAPER COMPANY

230 Park Avenue, New York, N. Y.

• • •

Mills at Rumford, Maine & West Carrollton, Ohio

Western Sales Office: 35 E. Wacker Drive, Chicago, Illinois

. . . A PROMISE

There will be a tomorrow! Already the skies are pink with the dawn. The day will bring new problems, fresh solutions—and opportunities to adapt to advantage the changes that are inevitable.

Packaging will be changed. Packages made of new materials have been evolved—in new shapes: new conceptions of packaging machinery to save time, waste and space will emerge. Highly compact machines for tightsealing packages thermoplastically—packages that are siftproof and moistureproof—filled and sealed at the rate of 120 per minute, or faster, will be the order of the day. We cannot supply the machine now—but tomorrow when we *can* supply it, you may need it.

We shall be prepared for you. Just as medical and surgical sciences advance immeasurably under the compulsion of war—compassing years of research within a few months—so the Palmer organization is gaining richly in technical experience and inventive capacity. In our Package Development Laboratory, revolutionary contributions to the design of packages and package machinery have originated—often without precedent, frequently by avoidance of orthodox methods—always with the acceptance of change as the only constant.

Tomorrow we'll have ready —packaging modern as the new day.

PALMER
CHICAGO

FRANK D. PALMER, INC.

528-31 North Western Ave. • Chicago, Ill. • Chesapeake 3344

PACKAGE DEVELOPMENT LABORATORY ★ SPECIAL MACHINERY MANUFACTURERS

PACKAGING

IS A CONVERSION JOB TO SAVE CRITICAL MATERIALS

Ridgelo
CLAY COATED
REG. U. S. PAT. OFF.

BOXBOARDS DO THEIR SHARE THIS WAY!

Chocolate Wafer folding cartons made of Ridgelo clay coated boxboard. The original packages were cellophane bags. The carton design simulates the product appearance in the transparent container. The gable top opens like the former package. Cartons made for Rockwood & Co. of Brooklyn, N. Y. by the Continental Folding Paper Box Co. of Ridgefield, N. J.

Here is one outstanding example of replacement design. It was awarded the prize in the Confectionery group of the First Annual Package Competition sponsored by the Folding Paper Box Association of America. This contest was based solely on folding cartons adopted instead of packages made of critical materials.

To this winner might be added others equally efficient in helping our war-time economy. Tobacco, cereal specialties, coffee, tea, cocoa, prepared desserts, adhesive tape and bandages, rubber goods, dehydrated products, bouillon cubes, aspirin, soda, dog food, hair wave pads, peanuts, tooth powder—these and other necessities are now packaged in Ridgelo boxboards.

Government special coated tags, cardboard signs and shell clip cartons are Ridgelo too. If yours is an essential product, let us have your war-time problem!

★ ★ ★ ★ ★ ★ ★ ★ ★

Serving Converters and Users with boxboards, coatings, laminations and protective finishes.

★ Ridgelo ★
CLAY COATED
REG. U. S. PAT. OFF.

PAPERBOARDS FOR CONVERSION AND ESSENTIAL USES

MADE AT RIDGEFIELD, N. J. BY LOWE PAPER COMPANY

Representatives: E. C. Collins, Baltimore • Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Son, Inc., Philadelphia

PERFECTION IS MEASURED IN 1/1000THS

. . . when this man makes molds for glassware

MEET HARRY HULSON. He has had over twelve years' experience in operating a duplicating machine in an Armstrong mold shop. With it, he copies every contour of a master mold so that the complete set of molds is accurate to within three thousandths of an inch.

Much of the quality of any glassware depends upon the molds in which it is blown. Harry Hulson knows this perfectly, and he takes pride in the fact that his experience and skill help keep Armstrong's Glass the top-quality glass.

This spirit of fine craftsmanship among the men and women in Armstrong's plants assures you that Armstrong's Glass Packages are consistently fine of finish, strong, accurate in size, shape, and capacity.

For the interesting story of Armstrong's Glass and the men and women who make it, write for a copy of the new, free booklet, "Men and Glass." Armstrong Cork Company, Glass and Closure Division, 5905 Prince St., Lancaster, Pa., Glass Plants at Millville, N. J., and Dunkirk, Ind.

ARMSTRONG'S GLASS

and **ARMSTRONG'S CLOSURES**

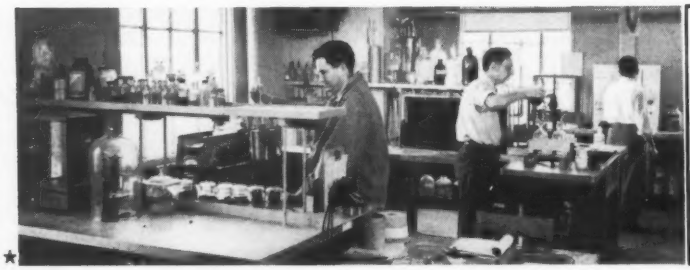
ACHIEVEMENT THROUGH CHEMISTRY

Through *Chemistry*, NASHUA has established itself as a leader in the field of developing papers for special uses that are essential to our modern way of life. As an organization engaged for nearly 100 years in converting paper to greater usefulness and broader service, NASHUA has pioneered in the development of decorative, waxed, waterproof, gummed and protective papers. NASHUA'S application of *Chemistry* has given paper the capacity to serve better than many other substances and to replace materials so costly as to be economically impractical.

NASHUA appreciates the wide scope of possibilities for the further advancement of paper. Its laboratories are continually working on developments for post-war industry.

NASHUA GUMMED AND COATED PAPER COMPANY, NASHUA, N. H.

WE ARE CONVERTERS OF PAPER— COATING, GUMMING, IMPREGNATING, LAMINATING, PRINTING, WAXING. OUR BASE MATERIAL IS PAPER OF MANY TYPES. WE ARE ALSO CONVERTERS OF CELLOPHANE.



CREATORS · CHEMISTS · CRAFTSMEN

NASHUA

MAKES PAPER MAKE MONEY FOR YOU

★ BUY MORE WAR BONDS ★

MODERN PACKAGING

MAY 1943 VOLUME 16 NUMBER 9

Uncrating aircraft in Pacific

WOOD for War

*by Maurice R. Merryfield**

By the second anniversary of Pearl Harbor the United Nations will have used almost three times as much material from American forests for boxing, crating and barrelling war supplies, as this country used for all military purposes including ships and cantonments in World War I.

When that conflict was over the Baruch Report declared that this country used 6,349,344,000 board feet of lumber for war purposes in 1917–18. During 1942 it used 6,500,000,000 board feet for war supplies packaging. Estimates indicate that 1943 will require 10,500,000,000.

The two years' total, 17 billion board feet of wood used to assure undamaged arrival of supplies to the front, would be material enough to build dwellings sufficient to house five war workers' cities the size of Cleveland.

Under-Secretary of War Patterson has informed the country that for this war we are using more tons of wood than we are of steel, but military reticence precluded his telling the proportion of the total used for specific purposes. It is no secret, however, that 17 per cent of the sawn lumber used last year went for war packaging, and at least 30 per cent of this year's consumption will perform the same service.

Durable containers are as important as durable airplanes. A mildewed shoe, a damaged rifle, a rusted motor or a water-soaked consignment of flour opened for fighting men's use is worse than a loss. It helps the enemy. Packaging is

* American Forest Products Industries, Inc.

1

the bridge that links production and transportation with use of war material.

To container engineers and the forest industries the packaging of war supplies is a three-way problem of conservation. Not only must goods be saved from damage in transit and while it awaits use overseas, but shipping space must be employed to the last load-carrying pound and inch. Packaging material must be used in such ways that it will not drain forest products needed for other war purposes, or needlessly deplete forest reserves. This means maximum use of what sawmillers call the "sidecut"—lower-grade boards that are left after the higher grades have been selected for construction, gunstocks, vessels and other military needs.

Thus, the problem involves engineering design, logistics and conservation. The solution is creating a new science. We are trying to pick up the military packaging lessons we learned in the last war, the first to pose our service of supply with a considerable export task. Compared with present requirements that job was simple.

World War I was fought almost entirely on one supply front which covered about as much ground as the state of Oregon. Variations of climate, temperature and humidity were not violent between the point of origin of a given shipment in the United States and the place of its use not many weeks later in France. Transportation was standardized, familiar and routine—truck and rail, surface ships across the Atlantic to established well-equipped harbors, rail or truck again. Handling was minimum.

Now no one knows when supplies are packed which or how many of the seven seas they will have to transverse, nor in what quarter of the globe they will be used, nor when. They must be ready for instant use whether they are unboxed on an arctic island in the dead of winter, in high summer on a glaring desert or in an equatorial swamp. Many shipments suffer no more hardy adventures en route than those of the last war, but packagers can never depend on that.

Boxes may be dredged by steam winches from deep in a ship's hold to be tumbled into wave-tossed lighters miles from shore, then landed on warehouseless beachheads to be piled in the weather for days or weeks, or floated through breakers to a harborless shore after months spent lashed on a storm-drenched deck. They may be shaken like dice in loading nets, or hoisted with plate hooks. Transportation may include airplane, submarine, jeep, dog sled, raft, stoneboat, or mule, camel or burro back. Native porters or war-bruised soldiers may tote them part of their journey over mountain trails or through steaming jungle. Some are dropped by parachute through belligerent fire or tossed from speeding trucks in combat zones. War transit does not know the cautions: "Fragile," "Handle with care" and "Use no hooks."

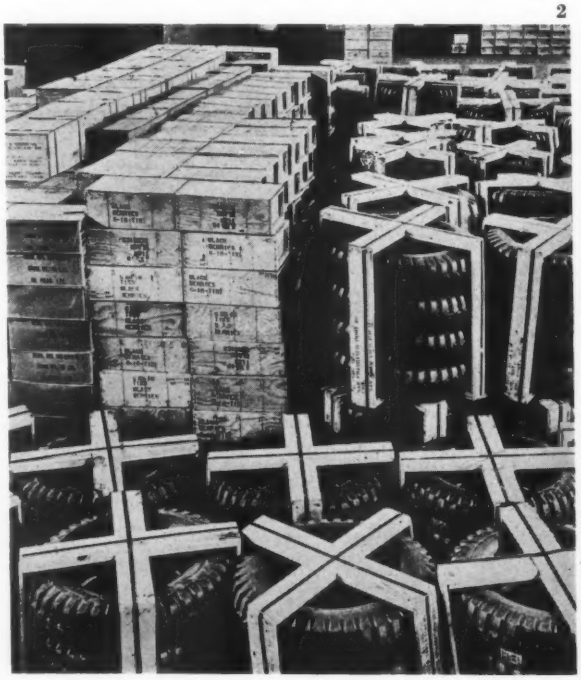
Protection against any eventuality, conservation of weight and space, ease of handling and marking, package surfaces that will hold identification marking undefaced and economy and availability of packaging materials are the absolute requirements.

Lumber has auxiliary packaging aids in protecting military supplies against mechanical injuries, moisture and corrosion. Chief of these are paper and fibreboard—both made of woodpulp—and cellophane and its relatives, made of wood cellulose. Often these materials, however, must be further protected by an outer case of boards.

Timber engineers, engineers from the container fabricating industries, engineers from the military services and the staffs of the Lend-Lease Authority, Maritime Commission, WPB, the U. S. Forest Service's Forest Products Laboratory

1. ***Axle assemblies are boxed separately at the Chevrolet Export Boxing Division of General Motors Corp. The assemblies are further protected by the paper which is used to line the wooden box. 2. Rubber tires are crated in this criss-cross fashion. Four tires are crated together for shipment. Steel strapping affords still further protection.***

2



at Madison, Wisc. and packaging engineers from the peacetime export industries collaborate in finding the best ways to pack everything from cotter pins and cheeses to cannon and coats, and from tongue depressors and tent pegs to trucks and tanks. Army Ordnance alone includes 250,000 items of supply. The Quartermaster Corps has its own list and the other services, theirs. Some of the containers specified in the packaging manuals are as elaborately designed as a house.

One result of collaboration has been shipping space conservation averaging about 20 per cent. On certain items it has topped 60 per cent. What used to be waste space in containers is used to the edge of weight limits. Once each garbage can had its own box. Now half a dozen nested together within a single lighter crate represent a 40 per cent space saving and the inner can may be packed full of socks. A boxed truck body may carry a load of canned goods. Wherever possible, containers have flat surfaces on all sides, top and bottom, for snug stowage. Protuberant housings are made unnecessary by minor disassemblies of the item packed.

Another result of improved design is stronger cases at cost of less wood. WPB estimated that 8 billion board feet of lumber for packing would be used in 1942. When it became apparent that more war supplies would be shipped than was at first thought possible, the estimate was upped half a billion feet. Industry did the job with $6^1/_2$ billion, almost a 25 per cent saving.

Lower grades of the softwoods, No. 3 Common to No. 6, predominantly one of the Western pines, red pine, jack pine and spruce are used chiefly for crates and boxes, but every species has its use. Upper grades go for construction and other military uses, though some are used for such items as instrument cases or containers for medical supplies.

When the country entered World War I, Army Ordnance boxing specifications called exclusively for the upper grades of lumber. Other uses had prior call. General Benedict Crowell, then Assistant Secretary of War, called on the Forest Products Laboratory to solve the dilemma. The laboratory proved that the old specifications were wasteful. They were rewritten. Changes which permitted use of lower grades of a wide variety of woods immediately brought good boxes from the factories. Research thus started has continued and has been tremendously accelerated by this war.

Early laboratory studies showed that proper construction of containers is as important as the wood that is used and that species of wood with approximately similar properties can be used interchangeably. Boards of all the species in one group can be used, if it should prove necessary, in the same box.

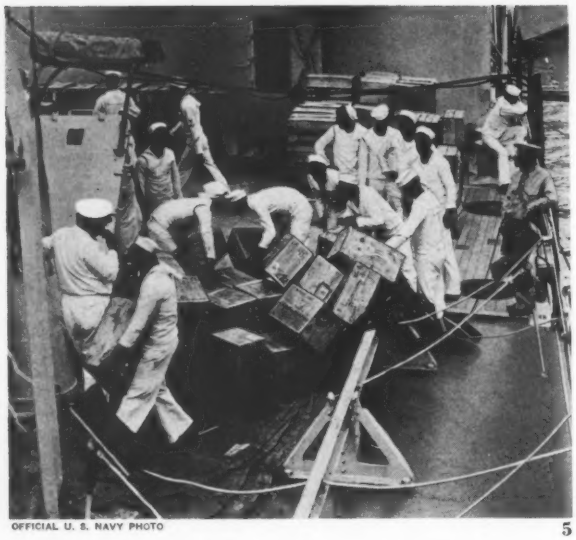
For convenience, the groups were arbitrarily designated by numbers 1 to 4. This led to some confusion. Belief was easy that Group 1 must mean "best;" Group 4 "inferior." This was not the case. Each group contains the species which are alike in their nail-holding power, tendency to split in nailing, strength as a beam and shock-resisting capacity. One group may require more or different nails than another or fasteners of a special sort like screws or lugs or greater care in joining, but strong joints can be made.

Group 1 embraces the 36 softer commercial wood specimens, both coniferous or "softwood" and broadleaved or "hardwood," and are the easiest to work and to nail. Group 2 includes heavier softwoods; group 3, hardwoods of medium density. Group 4 comprises the densest hardwood species which have the greatest shock-resisting and nail-holding

3. A Ponderosa pine bomb shell crate is used for shipping three practice bombs. Each of these bombs weighs 100 lbs. 4. Food supplies are stacked on deck of a U. S. warship before being sorted out for storage in the hold below. Many food products are given the protection of wooden wire bound or steel strapped boxes for wartime transport.

3

4 OFFICIAL U. S. NAVY PHOTO



OFFICIAL U. S. NAVY PHOTO 5

5. ***No one knows when supplies are packed which or how many of the seven seas they will have to transverse. Here stores are being loaded on a ship in Chinese waters.***

power, but lack certain other qualifications. Each group has its special advantages for particular containers. Choice fits the chore.

Container design and strength are tested at the Forest Products Laboratory with the aid of stress-and-strain machines and a huge tumbling drum. The biggest machine, 45 feet tall, looks at first glance like a giant's gallows, but it is really a press. Between its jaws it can exert a crushing force of a million pounds. Into it goes a box big as a freight car. Levers move, wheels turn, and the Paul Bunyanesque jaws slowly, surely, crush what is between them, while the box—which may be designed to serve as a small building when it has been unpacked overseas—creaks, groans, wails, until at last it gives way. Meantime delicate instruments in the press chart evidence of compression or strain and mark the points of rupture.

At each end of a long row of machines, similar to the giant press but of comparatively dwarf size, sits a tester placing box shooks of different wood species and dimensions between plates that move up and down, and watching clocks and meters that stop the instant a sample starts to break. At other machines similar methods test the strengths of various plywoods, cellulose films, papers and fibreboards, used for box linings or individual containers to be boxed together in "lots."

The laboratory's tumbling drum, 14 feet in diameter, built of steel, and open at the sides so all can see, turns slowly all day. A box, crate or barrel, packed with dummy goods of appropriate size and weight, like cans of water or packages of sand, is put into the drum. It starts revolving and its interior is so constructed that the box being tested is thrown first this way and then that, over and over, striking first on one corner, then on another, on an end, on a side, top or bottom—slam, bang. crash—equal to the worst that the toughest freight handler could do.

This may go on for hours with a single box. The result is sure to reveal the weak spots in a container's construction if the design is faulty, whether the nails or staples are of the right size and best placed to give maximum service, whether the lumber used is of the right group, grade and thickness.

Many other laboratory testing centers have been set up. The earliest motor vehicle container clinic established was that at Fairlawn, N. J., operated under the supervision of the Office of the Army Quartermaster General in cooperation with automotive industry packers. Its first job was to redesign the packs of about 100 different motor vehicles, ranging from motorcycles to 40-ton trailer trucks, manufactured for army use by 57 different companies.

Savings in cubic measurement run from 7 per cent up; average between 20 and 25. In some cases as much as twelve times more war goods than previously carried are packed into a given space.

Generally speaking, peacetime American industry was not export-minded. The bulk of experience in boxing for overseas shipment was in the automotive industry. Before the war one representative motor truck company boxed only 3.6 per cent of its product for shipment. By April of last year 62.5 per cent of its manufacture was boxed. Now boxing protects nearly all of its output when it leaves the factory. Before the end of 1942, one day's boxing schedule exceeded that of the entire year for this truck manufacturer in 1938, and 13 days exceeded that of 1941. Truck chassis boxing was increased 233 per cent. All parts shipments are boxed.

The fabricating space devoted to box-making at that truck plant more than tripled from the beginning of the war until the spring of 1942 and the boxing itself was put on an assembly-line basis, with a whole building given to a continuous chassis tear-down and boxing line ending with a depressed railroad track for quick loading. Power-driven bylines for parts packaging lead to the same place. During the first half of last year this medium-sized company used 23,500,000 board feet of lumber for packaging. How much it has used since is one of the military secrets, but the firm has had to lease a fairgrounds to store prefabricated box parts.

Before the war, heavy-duty export trucks were boxed as single units. Early in 1942 this was changed to a two-unit pack, with consequent savings of cubic space and lumber. Parts shipments have been standardized as "lots." A lot is parts enough to service 100 trucks for a year. The range of lots for one representative make of truck requires 93 different-sized wood cases, weighing when packed from 22 to 806 lbs. Except for motors and axles, 200 lbs. is the top limit. The "ideal" weight of a box of parts is 125 lbs.; the most practicable minimum, 70 lbs. "Ideal" capacity is 12 cu. ft. Another truck firm needs from 246 to 260 boxes for a lot of spare parts which contains 34,000 individual pieces weighing 40,000 lbs. and identified under 1,100 part numbers.

Most airplanes not flown to their destination are shipped in two boxes built of tongue-and-groove lumber so they can serve as semi-permanent structures overseas. They have flat exteriors for snug loading to save space, but are mounted on skids so they can be hauled stoneboat fashion. A bomber fuselage is mounted on a platform for support. Propellers, tools and a "lot" of parts are packed around it. Then, the rest of the prefabricated box is assembled around the whole. Plane re-assembly at the front takes two hours.

Most airplane motor boxes have windows for in-transit examination. Moisture is the enemy chiefly feared. The dehydration method of packing to prevent corrosion is now widely accepted for packing airplane engines. (See Modern Packaging, March, 1943.) Airplane wings, formerly packed edgewise, which made a cargo problem in a ship's hold, are now packed flat, saving unestimated space.

Standard cases with each size a multiple of a basic cubic

unit help loading supervisors to blueprint stowage patterns and save time as well as space. Field stoves, formerly shipped in double crates, now have a single crate, which saves 7 per cent space. Shovels used to be crated, but their ash or hickory handles are strong enough to stand unprotected shipment. They are now tied in bundles. Shoes formerly packed in individual cartons are bulk packed, with 25 per cent space saved.

Small arms, ammunition and quartermaster stores go to the front in smaller containers than in the old days. Largest food package sent to Africa weighs 70 lbs.—a load which can be transported readily under almost any circumstances. Packaging the 1942 production of canned goods required 150,849,000 shipping cases, all of wood.

Another 20 per cent saving in critical materials has come from making wood containers not only waterproof and weatherproof, but moistureproof and vaporproof. Treated woodpulp papers do a large part of this chore. In the last war a motor or a firearm or their parts arrived for use so stuffed and coated with heavy grease that cleaning them was a major operation. It produced an ill-natured quip from the members of the combat branches. Members of the Ordnance Departments, it was alleged, had their veins filled not with blood but with cosmoline. Now motor parts are oiled and perhaps greased but not to a degree which impedes fast assembly. They are often wrapped in cloth or paper which has been treated with oil or wax dips. A favorite is the treated paper which protects steel pipe lines from electrolysis, rust and soil corrosion—for example the Big Inch, new tube carrying oil from the Texas fields to the East.

Airplane wingtips are first packed in heavy paper, then cased in wood. Ailerons are individually wrapped in paper, then packed in corrugated paper boxes which fit in the space beneath the plane fuselage. Motor crankshafts and similar parts are dipped in a rust preventive compound, wrapped in protective paper, fitted into a wood box with a moisture-proofed paper lining. Precision parts are waxed, wrapped in paraffined "export cloth" fixed with sealing compound and put in waxed paper cartons before being boxed. Wood fibre tubes for anti-aircraft shells are shaped like the shells, which once were wrapped in cartons. Now steel-strapped corrugated paperboard protects the tapered ends when half a dozen tubed shells are made into a bundle, 43 in. long, which can be loaded on end, double-decked, in freight cars.

Dehydrated eggs are shipped "powder dry" in moisture-proof barrels made of tongue-and-grooved wood staves lined with double thicknesses of paraffined paper. Moisture-proof kegs replace metal cans.

Army Ordnance alone plans to use this year 700,000,000 containers of all sorts, including both wood and its wood-derived substitutes, for exterior and interior packaging. The 190,000,000 used by this department for all purposes in 1942 took more board feet of lumber than this country used for making all containers for every purpose, both domestic and export, in 1936. Sawn lumber Ordnance boxes last year could have planked a highway 30 ft. wide to encircle the globe. Fabricating those boxes took 75,000,000 lbs. of nails and a 1,500,000,000 ft. of steel wire and bands. The paper used to wrap Ordnance supplies would have blanketed Manhattan Island.

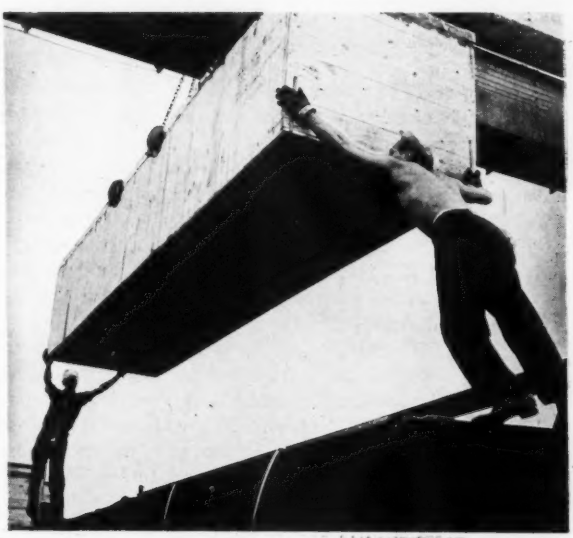
Improvement in the strength of wood boxes permitted the ratio of load weight space to be increased from 20 to 56 lbs. a cubic foot. In normal domestic packaging a ratio of 10 lbs. of gross weight to a cubic foot is considered efficient.

Boxes are tested for salt corrosion and humidity damage as well as for mechanical strength. Some Navy boxes are filled with water to make sure they won't leak, then dropped three stories to prove they won't break. Army footlockers, now mostly made of Western pines or resin-banded plywood, suffer similar ordeals.

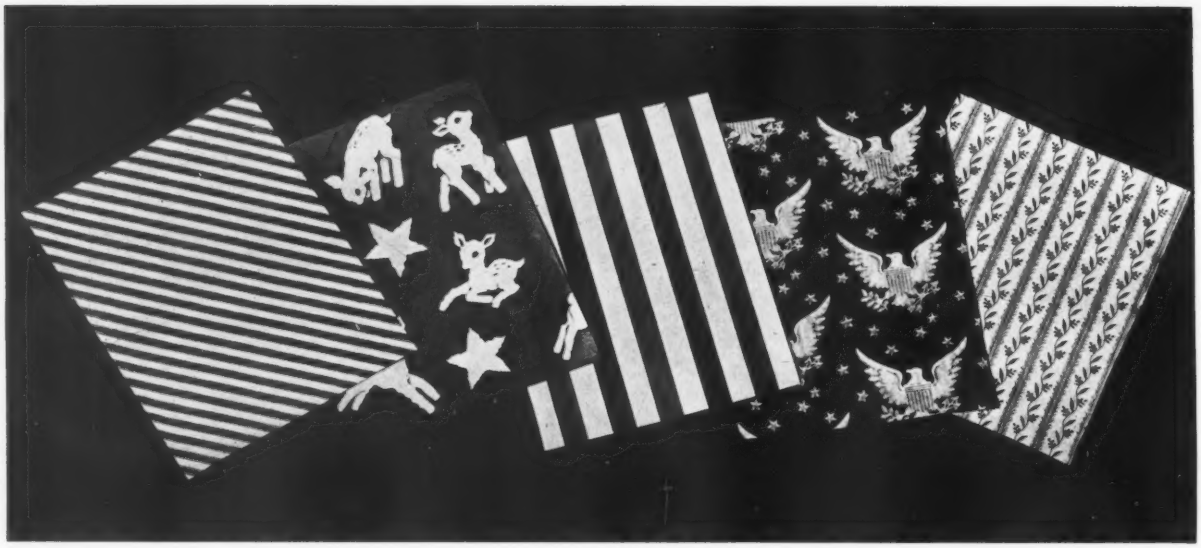
War boxing specifications are now drawn for ordinary commercial grades of lumber and to fit ordinary fabricating equipment, with particular attention to full use of "side cut" lumber. This is in accordance with the forest products industries program of finding complete employment for every part of a harvested tree. It is essential to an over-all program of forest conservation which counts elimination of waste as important as reforestation. (*Continued on page 112*)

6

7



6. Soldiers of the British First Army under the command of Lieut. Gen. Kenneth A. N. Anderson bring up supplies for the next action of the army, over a hillside in North Africa, on the backs of mounts. 7. Two complete motor and frame assemblies are ready for shipment. Loading them on the freight cars are employees of Chevrolet Export Boxing Division of General Motors Corp. Included in the crate are many more parts stuffed into every available space.



GIFT SUPPLIES

—Not out but Scarce

At an American air base in the Aleutian Islands last Christmas Eve, there were no roast turkeys, no plum puddings, no packages from home, according to an article in a recent issue of a leading weekly magazine.

There had been no boats from the mainland. But the men had a "tree"—rigged up from moss held together with baling wire. They sprinkled it with artificial snow made of shavings from a bar of soap. Decorations were empty 50-calibre shells picked up from the floor of a bomber and cornucopias made out of red paper backs of film packs, filled with compressed chocolate and sea biscuits out of their emergency rations. The only presents were a few bars of chocolate, boxes of matches and an address book dug up at the PX—not enough to go round so they drew numbers for them.

Poignantly, such accounts reveal the deep significance of Christmas tradition. At the same time they make fancy gift packaging seem terrifically unimportant these days when materials, labor and transportation to produce and distribute such packages are so direly needed for the essentials that will help to bring those boys home again—out of the fog of the Aleutians, the jungles of the South Pacific and the deserts of Africa.

The 1943 Christmas will be the third since the country went to war. If it is a simpler Christmas from a packaging standpoint, the compensation will be in the knowing that the absence of glamour is helping to win the war.

Last year, little change could be noticed on retail counters during the holiday season. Stocks of now scarce packaging materials and merchandise, made before restrictive orders went into effect, were plentiful. Such will not be the case this year. Those stocks have been used up now, for the most part. The companies who made them are turning out "gift boxes" of bombs and shells for the Axis or containers for food and clothing for armed forces on far-flung Allied battlefronts.

Answer after answer from package suppliers in response to Modern Packaging's request for gift information read something like this: "We are so busy filling war orders, we haven't the time to design or make gift items. We will do our best, of course, to supply our old customers and all others that we can."

Users of packaging materials, on the other hand, are so occupied with problems of war work, rationing and labor that they too will not give the same attention this year to gift packaging.

Pre-war glamour packaging is definitely out for the duration, and that's that. Any gift packaging you do see, will be the ingenious brain child of clever designers who have been able to do much with very little—a few left-overs, a ribbon or a seal carefully placed—a wrap of paper stock from inventories still available—re-use containers they have been able to dig up somewhere from pre-war stocks. Foresighted buyers are making their plans early to have the better chance of deliveries of whatever inventories exist and are permitted to be fabricated.

Papers, boxes, ribbons, ties

Best indication of the current situation may be gained from comments by makers of decorative papers, set-up boxes, folding cartons, ribbons, ties and labels, which include the largest classification of gift packaging supplies.

Nashua Gummed & Coated Paper Co., normally a substantial producer of decorative papers, wrote:

"The equipment on which we formerly produced gift wrappings is now being operated 24 hours a day on some direct government business for the Army Quartermaster Corps. There have been no directives from Washington that seriously curtail the manufacture of gift wrappers but we feel that they are non-essential and that there certainly isn't any question of

choosing between gift wrappers and government business. It is therefore with reluctance that we were forced to discontinue the manufacture of gift wrappers for the duration."

Not all of the decorative wrapping paper makers have converted completely to war industry, however, and some of them are making plans for a certain amount of gift business.

Charles W. Williams & Co., Inc., said: "It is our opinion that the greater part of holiday boxes for this year will be covered with either a glazed or embossed white paper. These can be appropriately dressed for the Christmas season with ribbons and other decorations, and likewise would be appropriate without such decorations for gifts at other times of the year."

This company said they still have stock papers with Christmas designs from last year's inventory, but do not find the demand for them as in other years. This would indicate the trend to standardization of gift materials for all-year round usage, instead of seasonal designs.

This company has added no new Christmas designs for 1943 to their printed line of box coverings. "The decision not to do so," they said, "was based on the WPB curtailment (L-239) of resale empty boxes, the reluctance of the department stores in wanting to buy Christmas boxes for give-aways and the mechanical difficulties in printing up new papers. By the latter we mean in obtaining metal for printing rollers, etc."

A letter from the Marvellum Co. was the only truly optimistic letter received:

"We have already this year printed new designs for the gift wrap houses who use exclusive designs," they said, "and we are figuring on their 1943 holiday business. So far, these houses are making plans as usual for Christmas.

"As for box cover papers, we are not planning this year to put out any new lines of fancy papers either for every-day or for holiday business, although we are now selling what we call new lines which we put out the very last part of last year. Since these lines are every-day designs, we expect to sell our old Christmas designs for this year's holiday season.

"We have a few new designs which we have sampled but are not putting in samplebook form. These new designs are conventional floral and stripe patterns with the exception of one patriotic design, which would also do very nicely for Christmas."

This design, incidentally, is red, white and blue with symbolic reproductions of Army, Navy and Marine insignia.

Samples of papers sent by Hampden Glazed Paper and Card Co. would indicate that they too are standardizing on papers that can be used the year round. They said:

"In our opinion Christmas boxes this year and special packages made up in department stores will be covered to a greater extent than in the past with plain glossy papers such as flints, both in white as well as in varied colors.

"There will be practically no foil or substitute foils available except left-overs and thus there will be a demand for glossy effects as one of the best substitutes for foil under present market conditions."

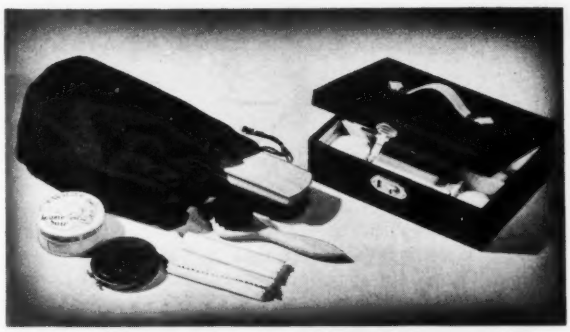
Makers of set-up boxes, in many cases, feel that they will be able to handle orders for their regular customers, since the demands for the boxes are running less than other years due to certain restrictions on the use of paperboard, rationing, etc. However, the boxes will be simpler, with fewer exclusively designed wraps and there will not be many fancy shapes.

Other box makers are producing containers under government contracts for war matériel, drugs and foods and, therefore, will be limited in the quantities available for civilian gift packaging.

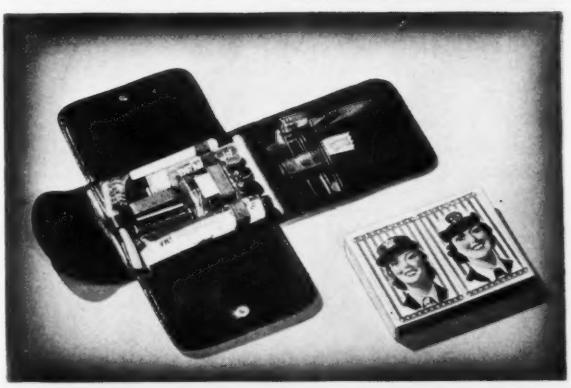
Cambridge Paper Box Co. wrote: "We are discouraging our men from soliciting containers especially designed for the holiday season because our work is running to merchandise on high priorities and the residue is for very essential consumer goods.

"This does not mean we are in favor of forgetting Christmas. In fact we are all for it, but we do believe that Christmas 1943 should be a most practical one and that any sensible merchandise presented as a gift will fill the bill admirably.

2



3



4

1. Gift papers are being standardized for year-round use, rather than special designs for Christmas. 2. Textiles in khaki and navy are used for shoe-cleaner kit and the covering on this Elizabeth Arden make-up box for WAACS or WAVES. 3. Toiletries kits in leatherette for service men are popular items as are these playing cards, packaged to show that the cards have WAACS and WAVES on them. Courtesy B. Altman & Co. 4. R. H. Macy and Co. is solving the shortage of gift merchandise by making "corsage packages" of almost everything—gloves, notions, hosiery. Illustration shows ensemble of handkerchiefs and boutonniere, also cosmetics.

5. *Santa Claus head of paper, fur, velveteen on Charles of the Ritz bottle of cologne, used last Christmas, is good example of how staple merchandise can be dressed up for holiday season from bits of this and that. A clever designer can do similar things by adapting such materials available.*

"We are extremely proud of the boxes we make for the so-called every-day market. Most of them are rather well designed and are capable of entering the gift arena without any extra party dresses for a particular occasion."

The McClintock Corp. is an important producer of set-up boxes in the department store field. They wrote:

"We will make gift boxes for the Christmas season covered with year-round paper such as white flint and embossed. Colorful lithographed papers for this purpose are discouraged by WPB, also by the department stores themselves.

"Our orders for gift boxes for the period extending from January 1 to November 1, 1943, are substantially less than for the same period of 1942, due to the very heavy carry-over of boxes in the department stores from the 1942 season and a feeling on the part of store managements that fewer boxes should be used this year than last because of restrictions on deliveries and the disappearance of certain types of merchandise from the counters. We feel that we shall be able to handle comfortably the orders for gift boxes for the Christmas season 1943. We believe that fancy wrapping for gift boxes is definitely out for 1943."

Walter P. Miller Co., Inc., said: "At the present time our production is oversold for items used in war production. It is our intention to take care of the retail store accounts which have been with us for many years in the best way that we can. We are manufacturing a great many boxes for articles formerly packaged in metal, but these are all either war production or for essential civilian purposes."

Bicknell & Fuller Paper Box Co. said they would make gift boxes without linings in accordance with L-239 but that labor shortages require orders to be placed early with little chance of last-minute fill-ins. Eggerss-O'Flyng Co. will make usual set-up boxes for the holiday trade, but no unusual shapes or sizes. They expect to take care of regular trade.

Users of fancy wood, leatherette and other types of utility and re-use boxes will be lucky if they are fortunate enough to obtain a portion of the small production of these containers this year for the gift trade. The Pilliod Cabinet Co. say they may produce some holiday boxes between government contracts. For the past year, however, they have been doing more government work than anything else and have produced only such civilian packages as did not interfere with the production of their government work. They say it is very difficult to get materials for the production of non-essential items and the production of fancy boxes will necessarily be very limited if not restricted entirely.

Harlich Mfg. Co. will feature two chest-type boxes, lined and covered with embossed leatherette. The packer who gets these for his holiday goods will also be lucky. They have a wide variety of uses for candies, food delicacies, cosmetics and toiletries. This company will feature no round containers this year.

Farrington Mfg. Co., manufacturers of jewelry boxes, eye glass cases and metal specialties, have radically changed their display boxes by substituting a composition board in place of metal for the construction. They said they were so crowded with war work, however, their production facilities are limited and their output, therefore, much smaller for civilian deliveries. Before long, they will have accepted all the orders they can take care of until 1944.

The folding carton, which has done duty for gift packaging in a number of situations—particularly in the cigarette field—will probably be seen again in this capacity this year, although most of the folding carton manufacturers are so busy with essential civilian or war work that they will have little capacity left for any new gift lines.

The gift situation with regard to folding cartons was summed up by U. S. Printing and Lithograph Co. as follows:

"As far as we know now, we will be allowed to print holiday cartons as long as they are regular cartons that were used as early as 1941. As we understand it, users of such cartons may print any kind of a holiday message on their Christmas cartons as long as they are not using a special box which they did not use after Christmas 1941."

Lithographers apparently will have some production facilities for this purpose. Stecher-Traung Lithograph Corp. stated: "We will be glad to produce holiday cartons for any items offered us in so far as restrictions imposed on cardboard paper, etc., do not interfere. So far no customer of ours has planned to change his gift cartons."

In past years, food packers have turned to the corrugated box makers for decorative gift shipping boxes, for such items as fruit cakes, hams, turkeys, etc. This year these companies are too busy making shipping cases to carry food, ammunition and other essentials to the armed forces.

As long as packagers can obtain ribbons or ties of various kinds they can achieve decorative gift effects. Naturally, the material and labor situation has hit the suppliers of ribbons and ties as it has everybody else, but there will still be opportunity to obtain ribbons of some materials, although colors and widths will be pretty much standardized.

The Fibre Cord Co. stated that a good portion of its line has become a war casualty. Printed or specially designed ribbons have been completely eliminated. All of their ribbons are being run in solid colors or standard combination colors, but they have a fairly complete assortment of red, patriotic, green, red and green, blue and "tango" to supply the holiday buyer. The latter color is an orange-yellow in demand as a replacement for metallic gold, which is out with all the other

metallics. This company has not developed any new ribbons in line with its policy of stripping non-essentials to the bone. A great amount of their products is being made for utility purposes and war work.

Other ribbon manufacturers are devoting production to things like identification ribbons that go around Navy hats.

The Du-Tone Ribbon Corp. has developed a decorative ribbon made from rayon that looks like striped velvet. These ribbons are being sold on small reels for gift wrappings in department and chain stores and in bulk rolls for use in the confectionery, florist and baking trades.

A package may be turned into a gift item also by the use of a decorative label or stickers and many such decorative notes can be supplied through the label manufacturers. These have the advantage of adding a seasonal note to an every-day package, require very little material for an effective treatment.

What leading gift packers will do

That the shortages and restrictions of gift packaging supplies will take a toll of many proud gift lines is indicated by the many replies received from users of these materials.

The Pioneer Suspender Co., for years one of the country's leading packagers of gifts for men and a user of many re-use boxes of plastics, leatherette, metal and other now unobtainable materials, wrote as follows:

"At the present writing the regulations make it appear that our only hope of gift packaging consists entirely of a "gift touch" added to our year-round packages in the form of inexpensive wrappings, ribbons or seals.

"Frankly up to the present time we have made no plans definite enough to speak of, but assume eventually we will hit upon something which will serve the purpose, but gift packages in the sense that we have always used them as an added utility incentive seem to be definitely out for the duration.

"Materials suitable for the production of packages of the type required for our products are not now available, with the exception of glass. Its possibility is limited because outside of an ash tray or a glass cigarette box, items of glass do not lend themselves to masculine imagination.

"The latest ruling on the use of cardboard for gift boxes, particularly in cases where the cardboard box replaces ordinary cardboard boxes for year-round packaging, restricts the possibility of this type of box in instances where the cost of the special holiday box would exceed that of the regulation year-round packages. This means that for products such as ours, special gift boxes are prohibited."

In the food field, the possibility of gift packaging is complicated by the problem of rationing. Candy, of course, will be a popular item but the quantity that can be produced will be seriously hampered by the limitations on sugar, chocolate and other ingredients. The trend in boxing is toward year-round boxes, because of the difficulty of obtaining orders for special designs. Cheeses which have been presented in gift attire by many of the leading companies will be restricted by rationing. The same goes for choice hams and other meat delicacies formerly packed in holiday wrappers or cartons. In previous years companies like General Foods Corp. offered special gift packs of their regular lines to stockholders and employees. Last year the assortment was sent in a fine Mexican basket. Until later this year, the company cannot say whether they will do likewise this year. They hope they will be able to find some kind of re-use container, however, to continue this procedure on a limited scale at least.

The trend in drug and toiletries products was indicated by a letter from McKesson & Robbins. "At this time," it stated, "it seems improbable that we will be doing any special 1943 Christmas packaging. In lieu of the fact that even stock merchandise is difficult to keep abreast of the growing demand and because of the labor-material shortage, it would not seem logical to launch into any particular Christmas activity."

Cannon Mills, which reduced its line from eighteen gift assortments to four in 1942, is not planning any for 1943.

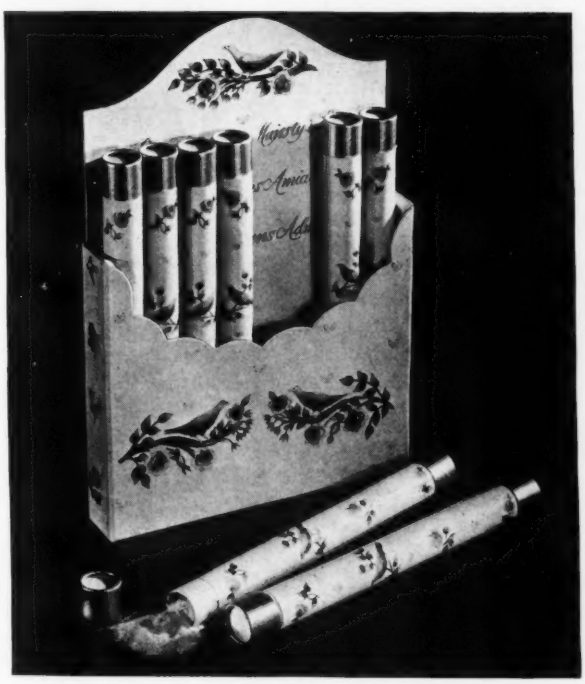
Many companies feel strongly that the emphasis should be on practical, usable merchandise that will contribute to the war effort by curbing unwise spending and by supplying articles that people need and can use. "Every unused bit of trash," said one food company representative, "uses up some of our material resources without contributing anything to the general effort of winning the war."

Manufacturers of cigars, cigarettes and other smokers' requisites are gift minded, but will be limited in what they use by the restrictions on the use of additional packaging materials. They may not use materials in addition to those which they regularly use for packaging their products. There appears to be no restriction, however, on printing a carton for cigarettes with a Christmas design if the company so desires. Formerly, a holiday sleeve was used over the regular carton, which the dealer could remove after the holiday season, should he not dispose of all the holiday stock. With the printed holiday carton this would not be possible, but since the problem of overstocking anything in today's seller's market is negligible, this should be no serious problem.

Among the bravest gift packagers of 1943 will be the cosmetic houses, although even here there will be a greater trend toward staple items rather than seasonal specialties. These houses, however, have clever designers. They are digging into left-overs and bringing out clever items from materials which in ordinary times would be discarded.

The manager of a well-known (*Continued on page 114*)

6. Shulton, Inc. is fostering re-use of materials by making packages into re-use items for the home. These bath salt cylinders are put into a container that may become a guest towel holder or a desk stationery receiver.



Tea, salt, cosmetics

Metal and part-metal containers for the Herb Farm Shop, Ltd., line of culinary and cosmetic products have been supplanted by fibre and glass. Tea, formerly packed in tin, has been transferred to an all-paper carton with the outer wrapping identical with that of the previous package. All-paper round talc cans, with a revolving sifter top of paper, have taken the place of the metal can. Garlic salt now comes in the same kind of paper can as the talc, except the salt shaker holds only one ounce. Standardization of containers for Herb Farm Shop's Pot Pourri sachet was effected through the use of a so-called glass brick. The two parts of the hollow brick fit together and are sealed with a wide strip of pressure sensitive tape. A length of ribbon is tied over the tape and made into a bow for a decorative touch. Since these glass bricks have re-use features, they have been very popular. The larger ones may be used for aquariums and the smaller ones for flowers.

Lipstick and rouge containers have gone to all-fibre, with the rouge box consisting of two pieces like a small pill box.

Another war-imposed change, which the company states has really benefited the line, has been the shift from gold-bronze inks, which are restricted, to white and pink ink designs on the blue background. The new combination is more attractive and feminine for the cosmetics and affords an improvement.

Credit: Lipstick and rouge box, F. N. Burt Co., Inc., Buffalo. Fibre cans, Cross Paper Products Corp., New York. Glass brick container, Owens-Illinois Glass Co., Toledo.

Design

Dehydrated corn pack

The E. B. Hostetter Co. of Richwood, Ohio, has for years been packing and selling dehydrated sweet corn. The greater part of their pack has been put into cellophane bags with a small percentage going into round paper containers with labels applied.

When Hostetter received word from their cellophane suppliers to the effect that they could no longer furnish cellophane bags due to curtailments on this product, the company had to find a new non-priority container. They decided that while they were making the change for the bag that the round paper can ought to be replaced, too.

The carton at the lower left in the photograph was the container developed to take the place of both the bag and the can. It is a plain folding carton made of regular boxboard and does not have any special moisture retaining or repellent features. The dehydrated corn is also packed in the carton without any bag.

The new carton does a fine job of identifying the brand and product name and in this respect has somewhat the advantage of the bag. Package resemblance for continued consumer recognition of the product is obtained through the design which is printed directly on the carton itself.

One side panel and the back panel have a group of recipes for cream and vegetable soups, corn puddings, escalloped corn and corn fritters. Another side panel describes the product itself, in order to familiarize the home cook with this dehydrated food.

Credit: Carton by The U. S. Printing & Lithograph Co., Cincinnati.

Compartment carton

In connection with the packaging of samples and a hospital unit of The Wm. S. Merrell Co.'s Diothoid brand of anesthetic and antiseptic suppository for rectal use, a special compartment carton was developed. The sample package contains two suppositories in an ingeniously die-out waxed board carton. It is received flat, in just one piece. To assemble, the carton is merely folded in a particular way and this provides individual compartments for two suppositories. The sample package has all necessary information printed directly on the carton itself.

The hospital package consists of 96 suppositories packed in individual units of three each. Each individual carton contains three suppositories and is of the same type as the sample cartons for two, except for the addition of one more compartment.

The design and construction of the sample pack and the individual carton for three are unique in that each item is afforded a special compartment without the addition of extra pieces. The only closure needed is a small tab which fits into a slot in one wall. The carton is simple, compact and economical. Cartons for the hospital package are supplied plain, without printing, and with a wax-free front panel for the application of a prescription label. The sales pack of 12 suppositories is offered in the conventional a set-up box with individual partitions and a transparent wrap.

Credit: Cartons, Richardson Taylor-Globe Corp., Cincinnati. Set-up boxes, The Miami Paper Co., Cincinnati. Wrappers, Imperial Paper & Color Corp., Cincinnati. Material for transparent overwrap, Celanese Celluloid Corp., New York City.

Histories

Foot balm boom

About five years ago, Lock's foot balm was placed on the market in department stores in the metropolitan area of greater New York. Sales were good, but the company recently had an idea that if they changed the package to provide more eye appeal, they could make a play for the drugstore trade. A blue and white label was selected with the name "Lock's Foot Balm" and a drawing of a foot prominently displayed on the front panel. A white, single-shell cap was chosen to replace a dark one on the amber glass jar. Satisfied with this design, the company put another of its products—Lock's Corn Callous Remover—in a similar package. They decided to offer both products together. This was solved by a simple but ingenious method of die-cutting an ordinary folding carton. The front panel of the carton it so cut and folded back that the foot balm is shown inside at the bottom and forms a platform for the callous remover bottle. Another die-cut portion of the front panel holds the smaller bottle in place. To prevent marring the enamel on the jar closure, a piece of die-cut paperboard is inserted between the jar and bottle. This is printed as a coupon offer for the company's foot soap. Simultaneously with the introduction of this new package, the company ran a newspaper campaign in Newark, which was the test area. More than 10,000 of the packages were sold within a few weeks.

Credit: Bottle, Anchor Hocking Glass Co., Lancaster, Ohio. Jar, Brockway Glass Co., Inc., Brockway, Pa. Plastic closure, Armstrong Cork Co., Lancaster, Pa. Metal cap, National Seal Co., Inc., Brooklyn. Carton, Brooks & Porter, New York City.

Latest revisions in ration K

Quartermaster Corps specifications for the assembly, packaging and packing of the U. S. Army Field Ration K have been revised from time to time in order to incorporate improvements and changes found necessary through the best test—that of actual use. A trip through the American Chicle Co. will give a good idea of these recent changes and as to how the various contractors are assembling and packing these food components for the government.

Ration K consists of three packages or serving units: breakfast, dinner and supper. Each of the one-meal packages is about 7 in. long, $3^1/_2$ in. wide and $1^5/_8$ in. deep. The complete ration or full day's supply weighs slightly over 2 pounds.

The breakfast unit contains: 2 packages of biscuits (K-1 and K-2 of special army formula), a can of chopped ham or other meat and eggs, 1 fruit bar, an envelope of quickly dissolving coffee, 3 individually wrapped tablets of sugar, a stick of chewing gum and 4 cigarettes. Each unit contains a key for opening the tin container of meat or cheese.

The dinner unit consists of 2 packages of biscuits, a can of cheese or cheese product, a package of confection (malted milk or dextrose tablets), an envelope of lemon juice powder fortified with synthetic Vitamin C, 3 lumps of sugar, gum and 4 cigarettes. A clip of 10 matches is included in this unit.

For topping off the day gastronomically, the supper unit supplies a package of bouillon powder, another can of meat, 2 more packages of biscuits, a 2-ounce bar of highly nourishing chocolate containing oat flour, milk powder and 150 units of Vitamin B-1 (this is known as the "D-bar"), chewing gum and the 4 cigarettes.

Use individual wraps

The components of each unit are individually wrapped; for example, the biscuits, the lemon juice powder and the confection are in cellophane, while the coffee is in a foil envelope. The lumps of sugar are in their usual or kraft-colored wrappers and a greaseproof paper wrapper is used for the chocolate bar. The cigarettes are packaged in either a soft wrap or a carton and then are cellophane wrapped for added protection. If the stick of gum is to be packed with the other food in the sealed bag it must be hermetically wrapped to prevent the escape of the flavor to the other foods. In this event there are 3 wraps on the gum: the outside wrap affords no special protection but is merely a label of identification done in a kraft color in conformity with the requirements specifying that no brilliant or gaudy colors be used on the outside surfaces of the packaging and packing materials. The second wrap is a waxed, laminated glassine paper, self-sealing under heat. The third wrap, the one next to the gum, is a sulphite paper and merely affords protection to the gum from the waxed paper when the latter is subjected to heat during the sealing process.

The meat and cheese are packed in round, tin containers and this food item constitutes our first major change in packing methods. According to earlier specifications the meat and cheese products were packed in rectangular tin containers. The main reason for this change was because of the fact that the majority of companies engaged in this packing were better equipped with machinery for filling the round tins rather than those of rectangular shape.

With the exception of the tin of meat or cheese, the cigarettes and the matches, all the food items are assembled and sealed in a moisture-vapor-resistant bag. The use of this bag represents another change that has been made in the specifications. Formerly, the various wrapped articles of food were packed directly into a carton waxed inside and out, with one end of the carton glue-sealed, the other wax-sealed. It was discovered, however, that this type of packing did not stand up under the stress and strain, so the combination of a bag within the carton is now employed, and the carton has both ends glue-sealed.

Bag-in-carton type

This bag is of the flat style construction and is being made of 3 types of materials: "(1) A laminated sheet consisting of a sheet of No. 1 kraft paper...laminated... to a composition lead foil... then laminated on the foil side to a sheet of moisture-proof, anchored, regenerated, cellulose film....

"(2) A laminated sheet consisting of one sheet of moisture-vapor resistant, heat-sealing, regenerated cellulose film laminated to a sheet of heavily calendered paper made entirely from kraft pulp....

"(3) A laminated film, consisting of two sheets...of... moisture-vapor resistant heat-sealing cellophane...."

The bag has a center seam, but it is specifically stated that the side folds of the bags shall not be sharply creased during the manufacture, since sharp creases would tend to weaken the bag. The sealing of the center and bottom seams and the top closure must be carefully done so that at least 90 per cent of the bags shall be airtight. Both the bag maker and the packer are required to carry out tests to prove to the satisfaction of the Quartermaster Corps inspectors that the sealing of the bags measures up to the specifications. The bag maker is required to test the bottom and side seams of bags taken from each bag machine every half hour during the course of production. The packer must test the top closure of at least one package taken from each lot of 3,000 packages.

The method of testing is to open out one of the bags so that it is approximately circular in shape (placing the hand in the bag will open it out sufficiently), fold over the open end and place this folded end in a clamp or some other similar device so that the bag will remain closed while being submerged in water. The sealed area which is being tested must be held at least 2 in. under water and if there is no visible escape of air bubbles from the interior of the bag, the closure can be said to be satisfactory. This is the sealed bag that houses all of the components of the serving unit with the exception of the tin of meat or cheese, cigarettes, matches and the gum when not sufficiently wrapped.

As a result of tests which were conducted to bring to light any abuses that the ration packages might suffer during shipment, it was decided to slip the can of meat or cheese into a sleeve made of kraft, single lined chipboard. It was found that the exposed rim of the can cut through the carton, so the primary purpose of the sleeve is to prevent this cutting. A mechanical purpose has also been served by the introduction

of this protecting sleeve: it affords a more solid surface for the wax dipping or wax wrapping of the carton, thereby assuring a tight seal. The sleeve has a glued joint with one open end and meeting flaps on the other end. When on the tin container, the sleeve is placed in the carton so that the slotted portion of its side is positioned against the confection, fruit bar or D-bar contained in the sealed bag. The cigarettes are then packed across the open end of the sleeve which faces the narrow side of the carton. When matches are to be included, as in the dinner unit, they are placed inside the sleeve on the end of the can.

The sleeve-protected can plus the cigarettes and matches and the sealed bag now find their way to the inner carton which is of a seal-end style with fully overlapping outer flaps. The full size of these flaps means an extra guarantee against air gaps and tiny openings through which moisture-vapor might seep. The carton is constructed from a single-faced kraft-lined bending fibreboard. The glue flaps of the manufacturer's joint are integral with one main panel of the carton and are on the inside of the carton when folded and glued. A water insoluble glue is used wherever an adhesive is needed in the carton. This glue is odorless and will not again become soluble. Should there ever be any minor imperfection in the overwrapping or the wax-dipping, this water-insoluble glue will hold and thus prevent the damage from spreading.

Before going into the remaining types of materials used in packaging Ration K, it is well to note how these inner cartons are filled with the food items, then follow along through the sealing, wax dipping and wax wrapping processes on to the other protective cartons and wooden shipping box.

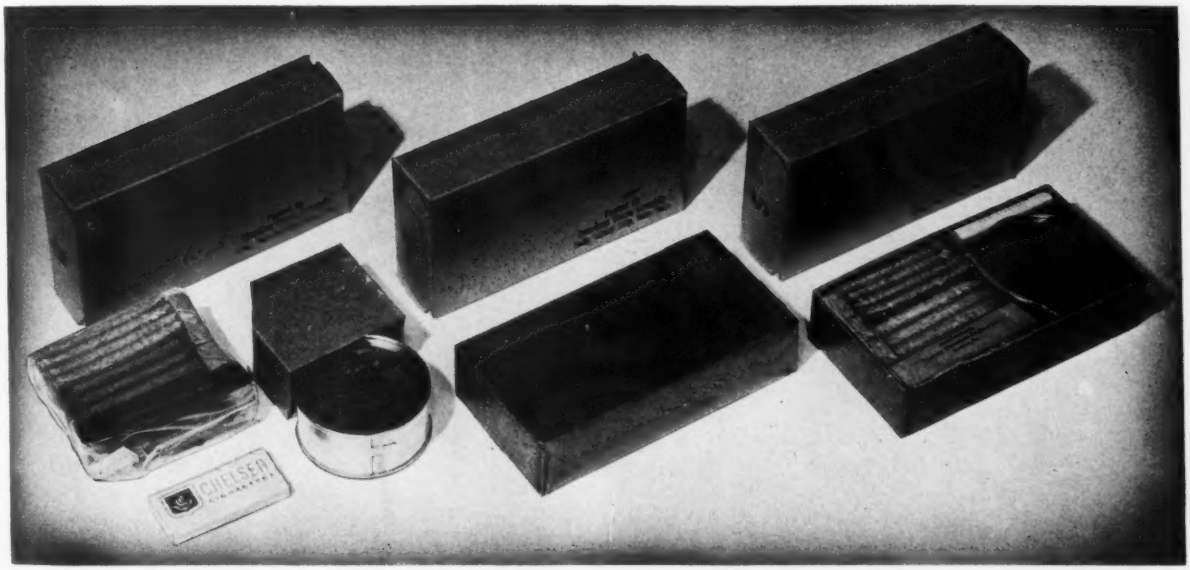
The cartons are packed by hand usually by a team of workers. First, the empty, moisture-vapor-resistant bag is placed over an upright mandrel or wooden form and the open carton is slipped over this. This mandrel fills about three-fourths of the space in the carton leaving just sufficient room in the top end for the packer to drop in the can of meat, the cigarettes (and matches when specified). The carton is then slipped off the form and the second operator fills the bag within the carton with the remaining food components of the unit. The completely filled cartons are then sent along a conveyor belt through the heat sealing apparatus which heat-seals the top-closures of the bags. After this sealed end is folded down into place inside the carton, the journey of the cartons continues on toward the gluing machine. Before reaching this machine, the end flaps are pre-heated by passing over heated rollers to insure a quick and firm set of the water-insoluble glue.

Two processes are being employed in providing an exterior, protective finish for this inner carton: a double wax dip and a double wax wrap. For the wax dipping process, the sealed cartons pass along on a special conveyor through a bath of warm, liquid wax. This wax "shall be of a microcrystalline type or may be a mixture of waxes...which shall give as a final product, a microcrystalline type of wax having a melting point...of not less than 140° F., and which shall not crack, chip or become separated from the surface on which applied, when subjected to a temperature of 20° F. below zero...."

The importance of the wax dipping (and the wax wrapping) process cannot be over-emphasized, since it is a part of the packaging process which affords vital protection to the food contents. Having been completely submerged in the wax bath, the cartons emerge on the conveyor and travel along for a sufficient length of time to permit the wax to set, then they are submerged once again into another bath of the same type of wax. Coming up from this dip, the cartons pass through a cold air chamber that helps to set the wax. The first dip causes the board of the carton to become impregnated with the wax to a depth of approximately 0.012 in.; the second dip builds up a continuous film of wax on the outside of the board approximately 0.005 in. thick. After the wax is set, a matter of a few seconds, the cartons travel along through an apparatus that smooths off the rough spots of wax. This operation, incidentally, results in quite a considerable saving of wax.

In this wax dipping procedure there is one step that is not found in the wax wrapping method: before the end flaps are sealed with the water insoluble glue, the cartons are pre-heated. This is done by means of (*Continued on page 106*)

Breakfast, dinner and supper serving units make up Ration K. The round, tin containers for cheese and meat represent major revision in packaging methods. Former containers were rectangular.



★ Packaging Pageant

1

1 The sparkling golden apple juice color which shows clearly through the transparent glass jug-handled bottle is enhanced by an attractive three-color—brown, green and red—label designed in the shape of a keg. The Elberta Packing Co. of Elberta, Mich., bottlers of Apple-Keg, selected glass jugs because they wanted to take advantage of the consumer appeal of their golden hue apple juice. Bottles and caps by Owens-Illinois Glass Co., Toledo. Label, Stecher-Traung Lithograph Corp., Rochester.

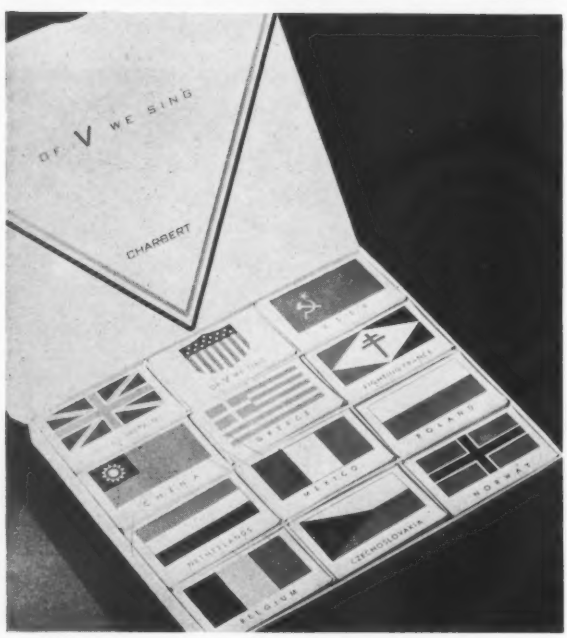
2 Despite war restrictions of all kinds, the carton with appetite appeal is still one of those peacetime items that remain. Montana Flour Mills has just brought out its Sapphire Biscuit Mix in a brightly colored carton with a picture of a plate of biscuits on the front panel. Carton by The U. S. Printing & Lithograph Co., Cincinnati.

2

3 Each toilet-sized bar of Charbert soap in this set-up box bears the flag of an Allied Nation on its wrapper. When the box is opened the twelve United Nations' flags make a colorful and patriotic self-display for the soap. Wrappers made by Brooks & Porter, New York City.

4 Scarcity of transparent materials suitable for carton windows has resulted in the making of a new style of carton for Miami Maid doughnuts. At the top of the photograph is shown the old carton with the full window. In the foreground is the window-saver carton which eliminates the window entirely and as an alternative prints a color photo of doughnuts. Cartons by The Menasha Products Co., Menasha, Wis.

5 Giant lettering for the trade name, "Tumbo," distinguishes this carton for The Taylor-Reed Corp.'s pudding mixes. The fact that the product is fortified with iron and vitamin B_1 is also stressed as a timely sales point for the family shopper. Carton designed and made by Robert Gair Co., Inc., New York.



3

6 A hinged lid set-up paper box contains a Tone powder puffer and a bottle of Tone Cream Deep Cologne. Unique in the set, though, is the box for the powder. It is made like an old-fashioned bellows and the powder is dispensed by pressing on the flat sides. Set-up paper box and powder puffer, The Waterbury

4

5

Box Co., Waterbury, Conn. Bottle, Carr-Lowrey Glass Co., Baltimore.

7 A flashing effect is given by the labels on bottles of Trans tooth paste when a row of these bottles is shown on store shelves. The label has been so designed that when several Trans bottles are placed side by side, the label supplies its own display feature without the necessity of additional display material. Bottle and closure, Owens-Illinois Glass Co., Toledo.

8 Very little change had to be made in the design when Saraka went from a rectangular metal can to a rectangular carton. On the whole, the package gains in shelf appeal. Carton has an inside liner which makes it resistant to moisture and features a reclosing device for consumer convenience. Lining is glassine laminated to the clay-coated boxboard. Carton by The Wilkata Folding Box Co., Kearny, N. J., Board, Lowe Paper Co., Ridgefield, N. J.

9 The Sheaffer Voyager is a compact, complete writing kit for V . . .-Mail use. The writing materials are packed in a sturdy telescoping, water-resistant cylindrical case. An unusual feature of the Voyager is the fact that it is designed as a ready-to-mail package, since it is pre-packed, pre-sealed and the label provides a special area for addressing. Fibre mailing tube, The Cleveland Container Co., Cleveland.

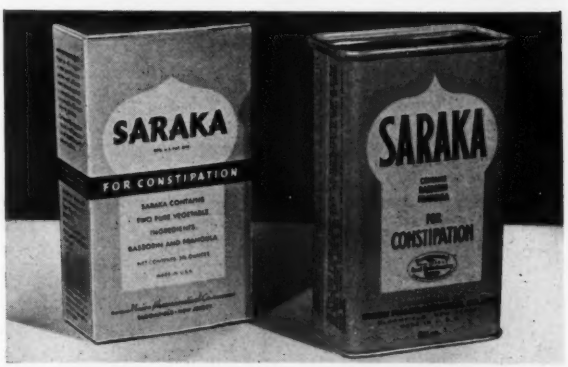
10 Wood and metal were both replaced by a corrugated box for Art Crayon Co.'s Hexagons. Special two-piece die-cut construction gives the box sturdiness required to provide protection in shipping and storage. Locking tab on lid forms a secure closure, but permits easy opening. Container by The Hinde & Dauch Paper Co., Sandusky, Ohio.

10

6

7

8



9

A GI LOOKS AT A PX—

by Pvt. Robert A. Latimer

Undoubtedly one of the largest retail markets every manufacturer of packaged products must look upon for the rest of the war period is the American soldier. Millions of men in uniform are still customers for the same merchandise they bought as civilians, prefer the same brands and are stimulated by packaging which fits into their new lives. The highest-paid, best cared for troops in the world, they are accustomed to better things and demand them in all the merchandise they buy.

For an accurate insight into how men in uniform respond to brands and packaging, there is no better barometer than the thousands of Post Exchanges operated by civilians and army officers at every cantonment, flying field or training base in the nation. The Post Exchange to most American soldiers is the only link between civilian goods and army life. Consequently it plays an important role in morale, providing essential needs and setting up a social center for slack hours off duty. Almost everything the soldier uses for personal appearance, entertainment in the barracks and health is sold through the Post Exchanges. These by military regulation are the only money-making enterprises on army posts and are set up primarily for the benefit of the enlisted man. All merchandise is sold at a minimum markup which shows only enough profit to pay salaries of civilian workers, cost of operating the business, etc. Yearly profit accumulations revert in all cases to the enlisted men, the funds being approved for dayroom furniture, games, parties, athletic equipment and similar needs.

Buying for the Post Exchanges is based at all times on what the soldier wants and asks for. Consequently, there is no uniform stock inventory or similarity between one exchange and another. Toilet articles, candy, gum, tobacco, athletic supplies and medicines are the basic inventory, with luggage, leather goods, gifts, jewelry, magazines, books and stationery close behind. The army constantly surveys the wants of its men by asking questions, follows the trend of new merchandise by experimenting with it on the Post Exchange counters and checking results closely. High-priority buying has made it possible to give the soldier the brands and types of merchandise he wants when it isn't available on the "outside," but the army doesn't exercise its priority prerogatives unless there is definite proof that the enlisted man needs and desires it. Thus, lieutenants and other officers of the Post Exchange Service can be seen going into the soldier's barracks, checking the contents of the enlisted man's lockers and ascertaining firsthand what he does and doesn't care for.

The large Post Exchange at Maxwell Field, Ala., serving both Army Air Forces aviation cadets undergoing Preflight School training and thousands of enlisted men in this Southeast Command center, is typical of the familiar "PX." Manager W. V. Beasley, a civilian under supervision of army officers, has been in charge for several years and knows what his uniformed customers will buy and what they will not.

"All enlisted men and cadets are extremely brand-conscious," Mr. Beasley points out, "since actually the soldier of today is the civilian of yesterday and the ordinary man wants to continue using what he has always purchased. He is normally susceptible to the same radio and periodical advertising of any product as he was before entering the service—perhaps even more so, because of the fact that the average enlisted man has much more opportunity to read national magazines from cover to cover than he had before. Therefore, they call for anything from razor blades to stationery by the brand name and usually stick to them."

Display shelving at this large Post Exchange closely duplicates those of any drugstore, department store, etc., before the war. Orderly rows of national accepted and advertised toilet needs are arranged according to brands, predominantly in large sizes and with little or no "off brands" which might be anticipated by the average observer. Soap, toothpaste, shaving cream, hair preparations, brushes, shoe polish, brass polish and other essential army needs are all established brands. "New brands or new products catch on a bit more slowly with army customers," Mr. Beasley added, "because the soldier doesn't hear of it so soon. Except for this lag or fluctuation, anything which civilians will adopt will be likewise favored by the enlisted man. As an example of brand consciousness, we have discovered that we cannot sell off-brands or unknown lines any easier than the civilian store can—the soldier wants to buy the same thing visit after visit. Any unknown razor blade, after-shave lotion, etc., which carries an unfamiliar label simply will not move rapidly."

Controls on all stocks are applied at the warehouse, the number of replacement requisitions coming from the sales counters determining the popularity of any merchandise. Post Exchanges now remind the soldier that he can buy at low-margin cost many items which are unavailable "outside," including razor blades, candy, gum and metal products. Seventy-five per cent of the nation's candy production, for example, now goes to the armed forces, much of it via the PX. With this type of buying, there isn't much need for little-known brands in any lines.

Packaging, however, is a different matter. "Soldiers are much more conscious and exacting concerning packages than civilians," Mr. Beasley stated, "for a number of reasons. For one thing, they insist on large sizes for all toilet articles. The price naturally has some consideration, but as a general rule, the enlisted man doesn't enjoy shopping too often for hit needs and will buy large tubes of toothpaste, the biggest jars of shaving cream and cigarettes by the carton rather than coming in more frequently.

"There is one peculiarity in army life which closely concerns packaging. We have discovered in some years of selling that thousands of soldiers buy two complete sets of toilet articles, one in small size, the other large. This occurred so frequently that we looked into it and discovered that enlisted men and cadets subject to daily locker inspections (where every item must be geometrically arranged and surgically

neat) would simply lay out one complete set of shaving brush, cream, toothpaste, brush, lotion, etc., to be left permanently on display, cramming those actually used into a cardboard 'ditty box,' allowed at the bottom of the standard army locker. Thus a daily dusting off of the 'display' toilet articles saves punishment tours and penalties, preventing the eventual sloppy appearance which half-used tubes and other packages would present.

"Another important fact is that no army soldier wants his toilet goods packaged in glass. Color or design of the package does not mean as much as its material. Glass packages, subjected to the shock and rough treatment of frequent handling in the soldier's constant trips and changes are too easily broken, releasing liquids over clothing and spoiling bedding or barracks bag contents. We have experienced a lot of trouble in selling any glass-packed item to our enlisted men, specifically such things as shoe polish, shaving cream, dentifrices. Soldiers tell us they prefer fibre can containers, waxed paper cartons or anything similar to these, to glass packages. Even those items packaged in glass for decades are more difficult to sell. What the soldier demands is a tough, durable package which will 'take it' under all conditions and keep its contents under control."

In connection with new packaging substitutes which are now appearing on all Post Exchange merchandise shelves, Mr. Beasley has found no trouble in accustoming the soldier to the change. "The enlisted man takes well to war-emergency packaging, because he is close enough to the actual effort to see the reason for it," he pointed out. "The men in an artillery gun crew who run short of shells in practice or actual combat are wise enough to forego objections to cardboard containers for shoe polish or tooth powder. They don't expect or ask for dressy packages which were commonplace before the war and show an understanding of new packages which is substantial help for us. Daily, scores of enlisted men customers ask to see new fibre or paper containers replacing the tin or tubes of the past and they enthusiastically commend them. A popular tooth powder, for example, one put up in a blue tin dispenser package, has sold at an even better pace when changed over to a conical waxed paper package. The shift from one package to another is something the soldier can take in stride more easily than the civilian, with the exception of metal-to-glass."

Precise neatness demanded by the army of its men has had some influence on the packages enlisted soldiers ask for, Mr. Beasley continued. "Lockers must be neat, therefore, soldiers will frequently attempt to buy all items to be shown there in packages of the same size or color and those which are not likely to tip over or spill contents. Bright colors are always popular and showy mass displays of a new item in a new package of one color will boost our sales just as it does in the chain drugstore or supermarket. Sending gifts home to the family—a frequent diversion of the soldier after payday—always involves the best-looking packages. In the main, however, it is durability, neat appearance and a reliable brand which the soldier looks for."

General inside view of one of the large Post Exchanges at an army camp, showing the men in action at the counters. For insight into how men in uniform respond to brands and packaging, there is no better barometer than the PX.

Concrete molds turned into fibre drums

Construction molds for concrete abutments and piers have moved into the packaging field. The same construction and materials, instead of being used for building, are now being sawed up and made into fibre drums. Several packers of liquid and semi-liquid products such as waxes, greases and paints are now using this war baby of the fibre drum family which is answering the need for a container with no critical materials in its structure.

Among the firms reported to be using this new device are Cheeseman-Elliot Co., Devoe and Raynolds Co., Inc., and U. S. Gutta Percha Paint Co. for paints; E. I. du Pont de Nemours & Co., Inc., for chemicals; S. C. Johnson & Son, Inc. for wax. Cheeseman-Elliot are shipping carload lots of their products in these containers to a commercial airline for painting planes.

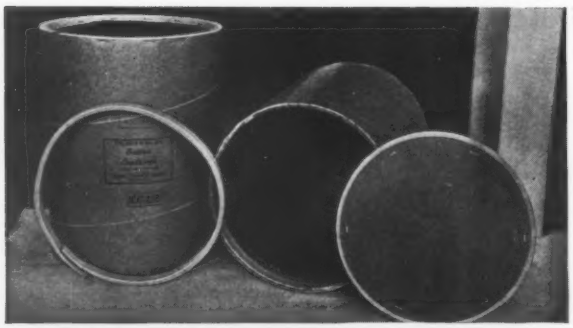
This container was developed in direct answer to the war-born demand for a non-metal drum capable of holding successfully flash-type products. The firm producing this container formerly made the long spirally wound fibre tubes used as molds for concrete construction. These tubes, wound into 6-ft. lengths, can be sawed into shorter lengths as required. Side walls of the new container are therefore of the same construction as the molds. After tubes are "chopped" into suitable lengths, top and bottom are applied through an ingenious arrangement of an inner sleeve into which the ends are set and firmly anchored.

Lining compounds may be waterproof or resistant to hydrocarbons, whichever is required for a particular job. The container has passed the tests of the Interstate Commerce Commission and the Consolidated Freight Classification for materials with flash points from 20 to 80 deg. F.

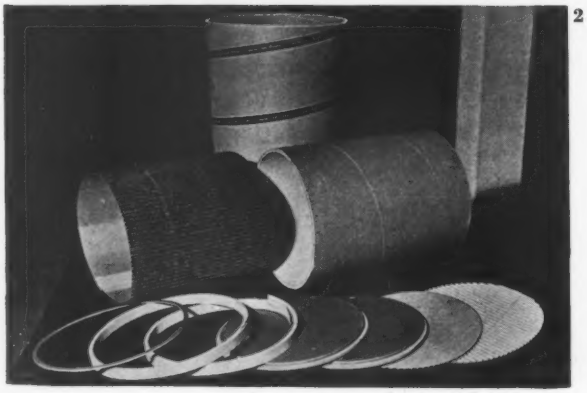
Tubing for the new containers is produced in 50-in. lengths, slightly larger in diameter than that used for cement pier molds. It is then cut into 15-in. sections for fabrication into 5-gal. containers. The side walls are made of 11 plies of fibreboard to form a shell 1/4 in. thick. A white fibrous sheeting is used for the inner wall instead of the previously used oiled material which was selected because it stripped cleanly from the concrete after the casting had set. Within the shell is placed a single-faced asphalt impregnated or laminated corrugated fibre sheet with type A flutes. This corrugated sheet forms the inner sleeve against which the head and end rest. The joint of the inner sleeve is butted and sealed with a heavy gummed kraft strip.

The bottom seal is composed of a ring made of die-cut fibre 12 in. thick. Against this is placed a corrugated asphaltum-impregnated, die-cut disc. Over this goes another disc composed of two pieces of fibre- (*Continued on page 110*)

1. Drums showing the outside and the inside of the container. Note construction of the lid and the split ring. 2. The long tubes are cut into suitable lengths and the top and bottom are applied through an arrangement of an inner sleeve into which the ends are set and firmly anchored. 3. The complete drum. The top is fastened in place with a special tool furnished by the container manufacturer.



1



2

3

There's Many A S L I P

A neat problem of conversion from metal to paper packaging was posed by FASTEETH.

This product is a vital necessity to the millions of false teeth wearers in this country. It keeps teeth firmly in place by compensating for gum shrinkage.

In devising a substitute for the FASTEETH metal can, Burt was asked to lick five key problems. The container had to dispense the powder evenly over the dentures. It also had to be proof against 1) Oil of Peppermint, 2) Moisture, 3) Sifting; and 4) had to be filled on existing machinery.

All of these problems were solved in the turn-top paperboard, glassine-lined, lacquer-coated container now on the market for FASTEETH.

This is one of Burt's creative contributions to Keeping 'Em Selling under wartime conditions. Others will be shown in subsequent issues of this magazine.

F. N. BURT COMPANY, INC.

500-540 SENECA STREET, BUFFALO, N. Y.

NEW YORK CITY PHILADELPHIA BOSTON · ST. LOUIS
ATLANTA · CHICAGO · CLEVELAND · CINCINNATI · LOS ANGELES
NEW ORLEANS · MEMPHIS · MINNEAPOLIS · KANSAS CITY

SAN FRANCISCO: 216 Pine St. — Telephone EXbrook 5323

CANADIAN DIVISION: Dominion Paper Box Company, Ltd.
469-483 King Street, West, Toronto 2, Cahada

Reynolds Metal is Battle-Tested t

Battle for a Beach Head!

This panorama of an imaginative battle portrays a beach head captured by the combined action of offshore bombardment, dive bombers, paratroops and landing force. Enemy has retreated beyond city; positions are being consolidated, materiel landed and base established for continued action. The descriptive captions, keyed to the numbers in the drawing, show multiple uses of the Reynolds Metal New Foil Packaging Material that won a Special Award in the Twelfth Annual All-America Package Competition.

1. **FIELD KITCHEN**
   - Dehydrated Beets
   - Dehydrated Potatoes
   - Spaghetti
   - Dehydrated Soup
   - Hard Candy
   - Concentrated Cereals
   - Dried Fruits

2. **LIFE RAFTS**
   - Emergency Ration
   - Bible
   - Signaling Mirror
   - First Aid Kit

3. **BASE HOSPITAL**
   - Plaster of Paris
   - Epsom Salts
   - Plaster Bandage
   - Dental Stone

4. **AMMUNITION DUMP**
   - Ammunition

5. **SUPPLY BASE, REPAIR STATION**
   - Tank Parts
   - Gun Parts
   - Plane Parts

6. **INFANTRY**
   - "K" Ration
   - Carlisle Bandage
   - Sulfadiazine Tablets
   - Benzidrine Sulfate
   - Matches
   - Cigarette Pouch
   - Chewing Gum
   - Razor Blades

7. **ANTI-AIRCRAFT BATTERY**
   - Gun Fire Control Director

8. **RECONNAISSANCE PLANE**
   - Photographic Film

9. **PARATROOPER**
   - Paratroop Kit
   - Compressed Rations

10. **FIELD DRESSING STATION**
    - Plaster of Paris
    - Epsom Salts
    - Plaster Bandage
    - Dental Stone
    - Field Dressing

11. **SIGNAL CORPS**
    - Radio Parts
    - Batteries
    - Teletape

12. **SUPPLY BARGE**
    - Water-proof Packages Floating Ashore

d to Meet Your Packaging Problems!

ARMOR-CLAD PROTECTION!

Like our fighting men, vital U. S. supplies now go into battle with Armor-Clad protection. On every fighting front, Reynolds Metal New Foil Packaging Material is performing amazing service, *safeguarding food, drugs, ammunition, supplies.*

This new wartime packaging is a solid sheet of metal foil, laminated to cellophane and dense kraft. A protective layer of asphalt compound, plus a special heat sealing coating, combines with the foil to solve the "tin can problem." *Really Armor-Clad Protection Without The Use Of Steel!*

Write Reynolds Metals today, if you have a war or a home front packaging problem. Let Reynolds help you solve it with this armor-clad protection, applied to your specific needs.

Reynolds Award-Winning Material Meets These Army-Navy Requirements!

1. Positive Protection Against Moisture-Vapor Transmission.
2. Immersion-Proof. Keeps water out!
3. Protection Against Insect Infestation, Odors and Light.
4. Safe Protection for Long Storage Periods.
5. Substantial Saving in Tin, Steel and Other Strategic Materials.
6. Saving in Space, Especially Shipment and Storage of Empties.
7. Saving in Weight.
8. Serviceability Under Expert Conditions.

REYNOLDS METAL

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • FOIL DIVISION • GENERAL OFFICES • RICHMOND • VIRGINIA

Precious Cargo

Longines-Wittnauer Watch Co., Inc.

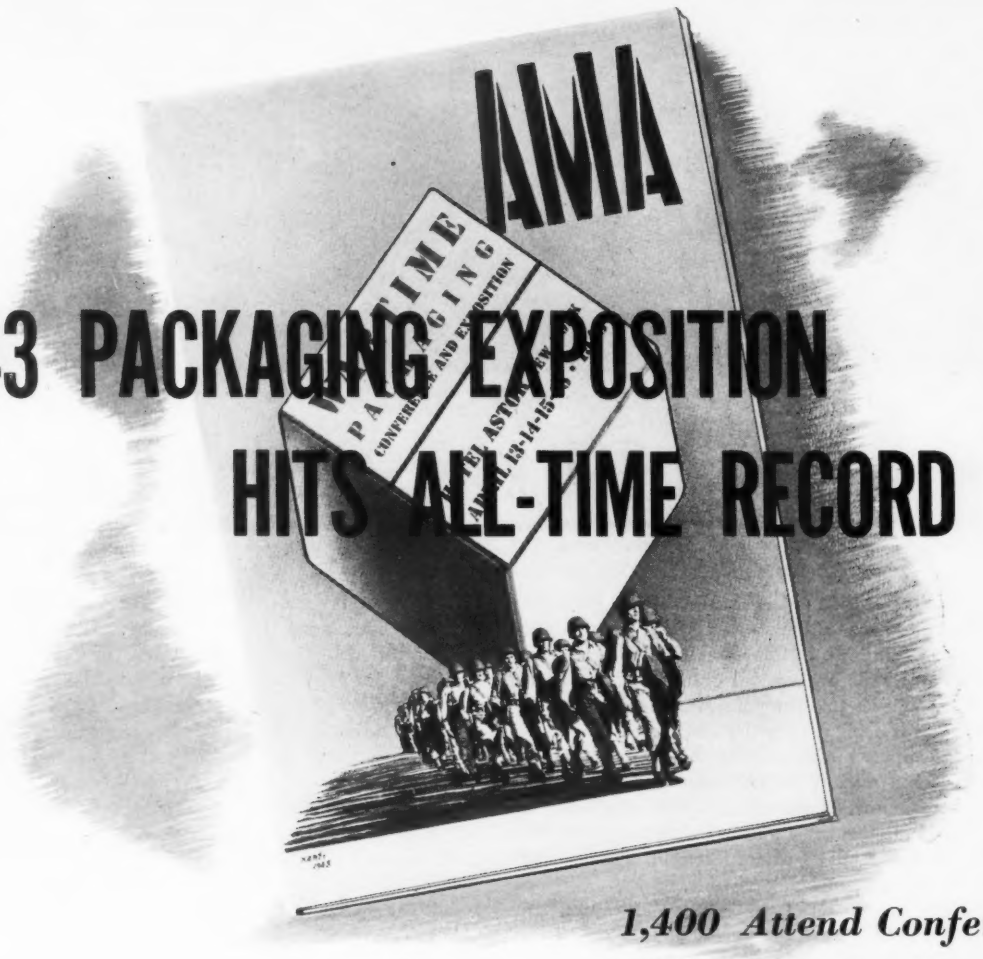
THE WORLD'S MOST HONORED WATCH

For almost a quarter of a century Longines-Wittnauer have speeded their precious cargoes safely, quickly, and conveniently with

MASON MAILMASTERS

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS. • 175 FIFTH AVE., NEW YORK CITY, N. Y.



1943 PACKAGING EXPOSITION HITS ALL-TIME RECORD

1,400 Attend Conference 10,000 See the Show . . .

The 10,000 or more visitors and 1,400 men and women who attended meetings at the American Management Assn. Wartime Packaging Conference and Exposition at the Hotel Astor, New York City, April 13 through 16, were privileged to witness one of the most momentous events ever held in the history of packaging.

For the first time since the beginning of the war, the whole story of packaging as an indispensable weapon of global warfare was revealed to the public.

No longer is this phase of American industrial development merely an aid to distribution and merchandising, but a tool of war—a means for moving inconceivable quantities and varieties of goods to Allied armies in every corner of the world, from huge wooden crates to carry airplanes and tanks to tiny glass vials, scarcely bigger than a needle, to carry medical supplies.

Those who attended were there to learn the newest methods of protecting such supplies that must be subjected to every climate of the earth, every known means of transportation.

Instead of discussions on new package designs to increase sales, the conference sessions dealt with the serious business of attaining moisture-proof seals, of making almost indestructible wooden and solid fibre boxes, of using every scrap of available material in the most efficient manner.

Much credit goes to the AMA for its persistence in making this year's convention possible. When the government clamped down on the use of already over-taxed transportation facilities for holding conventions, Alvin E. Dodd, president of the AMA would have been willing to give up the meeting this year, except for his belief in the importance of war packaging. Henry Howlett, executive secretary, spent four days in Washington showing how essential it was for package suppliers, manufacturers of war materials and military authorities to have this opportunity of gathering to discuss mutual problems of export shipping, the like of which this country has never before encountered.

When these reasons were presented squarely to the proper authorities, the wisdom of such action was unquestioned and the conference was welcomed on all sides. The record attendance at both the exhibits and conference sessions—the largest in history of similar events—is proof of the serious interest and need for this activity.

This report would be incomplete without a word about Sol Poliak of the AMA for his tireless effort in helping with the assembly of the Army-Navy exhibits.

On the following pages you will find detailed description and a picture story of those exhibits, and 11 pages of reports on the conference proceedings.

★ MILITARY EXHIBITS

Most talked-about section of the entire Wartime Packaging Conference and Exposition was the Army, Navy, Marine and Coast Guard exhibit. In this impressive collection, presented for the first time, the various branches of the United States military services told the public an important part of the story of what is being done with its tax and bond money.

Success of this presentation can be shared by every firm whose product has made a contribution to the efficiency, health and maintenance of the armed forces. Here was revealed the culmination of tireless effort on the part of the men in laboratories and in offices whose foresight and ingenuity made modern military packaging possible.

Credit for the conception of the military exposition goes to the members of the AMA personnel and to the Army, Navy and Marine Corps personnel, who, once the formalities were arranged, executed and unified the presentation.

As one entered the room at right he saw the highlights of Army Engineer Corps packaging—containers holding paddles for landing boats and pontoons, moistureproof packages for engineers' tools and equipment, weatherproof V-board and wooden boxes.

In the Army Signal Corps booth, the visitor was privileged to examine the packaging of radios and delicate radio parts.

The packaging problems of Army Ordnance, which supplies mobile forces with almost everything for their function and existence except medicines, food and clothing, were shown in the next booth. Here were large cases of shells, cartridge boxes, guns, and probably hundreds of other items.

The Army Medical Corps exhibit showed how packaging has made it possible for medical supplies to reach the fighting front in the same sterile and effective condition in which they left the pharmaceutical laboratories and factories. Thermoplastics, kraft-and-metal foil laminated sheeting, water- and gasproof corrugated and solid fibre board, padding materials, impregnated papers, rubber, glass, metal and wood contributed to this end. Center of interest was the dramatic story of blood plasma packaging. Surrounding this were packages of bandages, sulfa drugs, the new and improved plastic snake-

They put on the show. (Left to right) Stanley G. Sommers, director of exhibits, War Department; Capt. W. C. Wallace, U. S. Navy; Capt. L. E. Trickle, Engineer Corps; Lieut. (J.G.) W. S. Hassler, U. S. Navy; Major M. J. Odell, chief, Packing and Packaging Div., Services of Supply, War Department; Capt. Thomas W. Fred, U. S. Marine Corps; Sol Poliak of the AMA.

bite kit, kits containing aids for the relief of gas poisoning, first-aid kits small enough for a paratrooper's pouch.

How and what soldiers eat was demonstrated by the Quarte master Corps. Here, the visitor could see the various ration units—assortments for mountain, jungle and field operations. Also included were samples of field rations for a Chinese soldier. Large quantities of these are supplied by lend-lease.

How gas and flame throwers are firmly nested in nailed wooden cases and how gas masks are packed for instant use were among the attractions in the Chemical Warfare display.

The Air Force exhibit revealed the efficient ways to prevent corrosion by developments in the wrapping and packing of airplane engines and repair parts. Many of these wraps eliminate the need for greasing and the lost time required to de-grease when the parts are to be used. Illustrations were shown of both methods of wrapping to prevent corrosion—Method I by coating with a preventive and wrapping, Method II, the new dehydration method.

Similar displays of Navy, Marine Corps and Coast Guard packaging occupied the second half of the room. The Navy's Bureau of Ordnance told the packaging story of how machinery and armaments are dispatched to distant ports for replenishment of its fighting forces. A photo montage presented an action story of the sample packages arranged by the Navy Bureau of Aeronautics. Among the items presented by the Navy's Bureau of Surgery, the two which received most attention were a first-aid unit carried by a paratrooper and a wooden boxed field hospital unit equipped to take care of the ills and wounds of a detachment of 100 men.

Another high-interest point in the Navy exhibit was the full-size life-raft for 10 men, with samples of the equipment supplied not only to the 10-man raft, but to larger rafts and lifeboats. These supplies included a floating light, distress flares, water tank, food container, can for storm oil, foil-wrapped signal mirror and the new emergency fishing kit.

A high spot in the Marine exhibit was a solid fibre weatherproof box with waterproof taped seals which had been towed five miles in the Delaware River. On completion of the test, the contents were dry and undamaged. One of the boxes so tested was exhibited floating in a aquarium tank, where a miniature figure of a Marine in camouflage uniform was "shoving it ashore." Responsible for the entire exhibit of Navy, Marine Corps and Coast Guard was the Bureau of Supplies and Accounts. The exhibit carried out the dictum of Rear Admiral William D. Young, (SC): "If it's worth making and shipping, it's worth packing right."

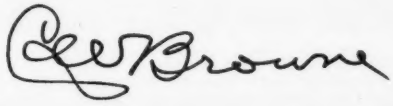
The Bureau of Supplies and Accounts presented its own exhibit of how essential food staples are packed for shipment to both advance and base units. It included 50-lb. units of enriched flour, packed in a cotton bag, protected by a corrugated board, waterproof wrapped, and sleeve, firmly fastened with a metal strap; packs for spaghetti and dehydrated fruits, shortening in a cellophane bag and fibre box; larger moisture- and insect-proof packs of flour and dehydrated potato flakes.

THIS IS EVERYBODY'S WAR

This war belongs to all of us. We're paying for it—we ought to know what's being done with our money.

The Armed Services united to tell us just that, as far as packaging is concerned, at the Annual Packaging Conference, sponsored by the American Management Assn. That they did so is a credit to the vision and activity of the AMA. But for that, there might have been no packaging conference at all. It would have been little short of tragic if anything had been allowed to prevent holding this Conference, where such vital information was exchanged.

In a dramatic and spectacular fashion, the remarkable Army-Navy packaging achievements were assembled at the Packaging Exhibit to be seen by more than ten thousand serious-minded visitors who were given full information by a courteous and competent Army and Navy personnel which accompanied the Show. To the Army and Navy goes our appreciation for this splendid exhibit. They have taken full advantage of an opportunity to tell the public, through an AMA sponsored event of their cooperative accomplishments. The packaging public at least will respond with renewed effort and interest.



ARMY,

Tools, equipment and even paddles for landing boats and pontoons were shown packed and wrapped in the exhibit of the Engineer Corps. Waterproof protection for equipment was one of newest packaging wrinkles.

Radio is to the Signal Corps what ration points are to a pound of steak today—impossible to think of one without the other. Here are radios, radio parts and batteries ready for safe delivery to parts unknown.

Ordnance supplies mobile forces with almost everything. Packaging in its most minute details—even to inventing a device for speedily marking packages for quick identification—characterized the exhibit.

Thermoplastics, paper, glass, rubber, metal and wood are used by the Army Medical Department to protect supplies so they reach the fighting fronts as sterile and effective as when they left the laboratories.

Wherever fighting men go—mountain, jungle, desert or arctic—there go ration units planned by the Quartermaster Corps. Gas masks, gas and flame throwers were high points of the Chemical Warfare Service.

To prevent corrosion of airplane parts, the Air Forces demonstrated special methods of wrapping and of dehydration. Work of this branch of the armed forces was graphically shown in a photo-mural.

NAVY, MARINES, COAST GUARD

A smiling Marine explained that the solid fibre case floating in the aquarium tank—highlight of the Marine show—had been towed for 5 miles in the Delaware River. He guaranteed contents to be dry and undamaged.

Three Navy men, a Marine and a WAVE examine some of the Coast Guard packs and read up on Navy specs. The metal strapped wood and fibre boxes in the back hold radios and other military equipment.

This naval doctor is standing behind a medical field unit designed to serve 100 men. Bureau of Medicine and Surgery also showed among other things a compact fishing kit for the use of shipwrecked men.

A visitor learns from a Navy man how the Bureau of Aeronautics wraps spare engines and stores crated planes in holds of vessels. A photo-montage for the Bureau of Ordnance showed the exhibited packages in action.

A courteous WAVE was on hand to explain not only how the Navy was packing its supplies but to tell about the handling problems. A huge photograph illustrated dramatically what happens when a vessel is unloaded.

Responsible for both advance and base units, the Bureau of Supplies and Accounts sees that food staples get there in A-1 condition. In the photo are flour, shortening and containers of dehydrated foods.

CONFERENCE REPORT

The wartime conference, under the sponsorship of the American Management Assn., opened on a keynote of looking ahead to post-war conditions, coupled with a determination to make the best of current necessary controls.

JOSEPH GIVNER, executive vice-president of Real Silk Hosiery Mills, Inc., and vice-president of AMA's Packaging Division, was the keynoter. "Packaging," said Mr. Givner, "is manifesting its ability to perform a new function. Prior to war shortages, the primary purpose of packaging was decorative glamour with functions of protection and economy in the background. Now the situation is reversed." With particular respect to economy, Mr. Givner pointed out that reductions in packaging costs have in many instances made it possible for a producer to maintain the quality of his products—as nearly as wartime materials will permit—and at the same time stay within the ceiling prices imposed by OPA. He cited examples, some drawn from his own business, to indicate that this was being successfully done. In some cases he admitted conservatism was encountered along with a desire to retain established forms of packaging, but these were obliged to give way before the stern necessities of the times.

Joseph Givner

The important development in today's picture, Mr. Givner stated, is the fact that business and government have been learning how to get along with each other. The present administration in certain governmental departments, he said, was showing an attitude of helpfulness in marked contrast with that of some officials who preceded the present group.

Mr. Givner, in response to a question from the floor indicated a bright outlook for the future. Commenting on the former "appeal" function of the package, Mr. Givner said the appeal element would remain and continue to be important but that it would be on a reduced scale and at a lower cost. "There will be more things sold to more people for less money than ever before," he said. Future economies in mass production and lower packaging cost would help bring that about.

PROSPECTS FOR MATERIALS

CHARLES L. SHELDON, now returned to his former post at the Hood Rubber Co. after more than a year as Chief of the Containers Division of WPB in Washington, followed Mr. Givner's talk with a discussion of the outlook for packaging materials. "Last year," he reminded his listeners, "I said you could change to wood, paper and glass and not worry, but that picture has changed beyond anything that any of us expected." This was by way of introduction to a roll call of materials and discussion of the prospects of their availability for the rest of the current year.

GLASS—"In 1942 the glass container industry produced 79,000,000 gross," he said. "During January and February of this year they were producing at the rate of 90,000,000 gross in spite of some interruptions due to lack of fuel oil on the East Coast and natural gas in the Middle West. One of the best informed men in the industry thinks that 92½ million gross will be made. The industry is about 7 per cent oversold at the present time. I know of manufacturers of certain products who are trying to pack in glass but cannot get any glass company to accept their business. This year a tremendous number of home canning jars must be made and there is some question whether or not this program can be met. Standardization orders by WPB have played a large part in increased production. Look for more of them. Possibly an inventory control order may soon be issued and certain types of glass containers may be eliminated. The glass industry has done a great job and will continue to do it, but, at the best, I can only foresee a very tight situation for the balance of the year.

FIBRE DRUMS—"Approximately 3½ to 4 million fibre drums were produced in 1941. Production in February was at the rate of 12 million per year. It looks good, doesn't it? The demands of paint, petroleum, chemical and food products is estimated at 30,000,000 this year. I understand that AA-2-X is the lowest rating that will obtain fibre drums at the present time. However, there is a very good chance that production will improve considerably during the next four months when new and improved facilities begin operating. Certain types of knocked-down drums are being used very satisfactorily for the shipment of a number of products. Experiments are being continued toward the development of drums for the shipment of oil, gasoline, alcohol and similar products. Maybe by the end of the year the situation will be easier.

STEEL DRUMS—"Limitation order L-197 governs the use of steel drums and you cannot buy any unless you manufacture a permitted product. The industry has plenty of capacity to take care of all permitted civilian needs.

METAL CANS—"M-81 is the order that tells what we can use cans for. Plenty of capacity in the industry to take care of all permitted needs.

MULTIWALL BAGS—"There is available capacity to manufacture at least 50 per cent more multiwall bags than are now being made and paper necessary to meet increased demands can be obtained. Kraft multiwall bags are rugged containers and can be used to very good advantage in packaging a wide range of products. Many materials formerly packed in steel drums, such as asphalts and resins are being successfully packed in these bags. There is every reason to believe that this form of packaging can be extended.

TEXTILE BAGS—"The textile bag industry normally cuts up into bags about 1½ billion yards of fabric, approximately one-half burlap and one-half cotton. The latest government estimates of 1943 requirements, including military lend-lease, increased agricultural demands are approximately 2½ billion yards. Shipping shortages have severely restricted imports of burlap. The government is making every possible effort to increase production of cotton bag fabrics and to channel the needed goods into the hands of bag makers by means of priority rating and other directives to offset the prospective burlap deficiency. Despite all these efforts there appears to

be a deficit of several hundred million yards between supplies and demand.

TIGHT COOPERAGE—"Plenty of capacity exists in the tight cooperage industry which is only operating at about 50 per cent. The difficulty is in obtaining staves. Stave manufacturers claim ceiling prices are too low and that they cannot continue to operate at present prices. This condition may be corrected shortly by new ceilings.

NAILED WOOD BOXES—"Makers of nailed wooden boxes are operating at about 80 per cent capacity. There isn't any lack of orders, however, and the only reason the industry is not operating at a higher level is because of insufficient lumber supplies. During the past four months, box manufacturers have been able to obtain only about 60 per cent of their lumber requirements.

C. L. Sheldon

WIREBOUND BOXES—"Wirebound box producers operated at about 65 per cent capacity during 1942. Recently production has fallen to 50 per cent due to the shortage of veneer. The manufacturers of wirebound boxes as well as the manufacturers of veneer claim that the lack of production of veneer has been due entirely to inadequate ceiling prices. There has also been some diversion of box grade veneer to other uses because higher prices are obtainable in other fields. Government has made a study of the cost and there is good reason to believe that ceiling prices may be raised by approximately 10 per cent in the near future. While this raise in price probably will help some, the industry does not feel it will be sufficient to increase production to the extent necessary to meet the demands.

CORRUGATED AND SOLID FIBRE—"I must admit I am confused about the situation of corrugated and solid fibre. Some men from the industry believe the present shortage is only temporary; others say there is going to be a tight position the rest of the year. The same is true of government officials. We do know that the development of the new type "V" boxes and the government demand for this type of box, plus a shortage of woods, labor and WPB Order 241 restricting container board production, caused serious dislocations in the industry. But I also think that the issuance of Order 241 brought about a buying wave that put all manufacturers in an oversold position and very probably increased the inventories of shipping containers over a great many manufacturing concerns.

Since Order 241 was revoked, jute container board mills have reopened, production of container board has greatly increased and is fast catching up with manufacturing demands. Restrictive orders on kraft paper or products made of kraft paper may be forthcoming so that the pulp so saved may be used in the manufacture of container boards. There is also a chance that a shipping container and inventory order may be issued. I have seen the container business have the same sort of trouble a great many times before and always, within a short time, their position was reversed and all were out looking for business. Possibly things are different now, but I am going to stay with those who think that an easing of the situation is in sight and that before the end of this year there will be shipping containers for all.

CARTONS—"At this moment, carton makers are sold well ahead and certain specialty containers, such as are used in packaging tooth or talcum powders, are very difficult to obtain. There just isn't enough equipment available to take care of the demand. Certain grades of protective papers needed to make tight and moistureproof cartons are also scarce. It looks like a very busy year for our folding and specialty carton manufacturers. Paper can demands are far ahead of production, but new facilities will give some relief in the next 60 or 90 days. This also applies to fibre cans. This year it is estimated that approximately 7,800,000 tons of board out of a total of approximately 15,000,000 tons of paper and board to be produced will be used in the manufacture of shipping cases, cartons and other types of containers. Approximately $4\frac{1}{2}$ million tons of steel and 12 billion feet of lumber and the dollar sales of the entire container industry will be in the neighborhood of $2\frac{2}{3}$ billion dollars."

Chairman C. B. Larrabee, president of Printers' Ink Publications, offered an opportunity for questions which the audience was quick to seize.

In view of the fact that several references had been made to the desirability of eliminating packaging frills, a number of questions revolved around just what constitutes frills. Mr. Givner cited two examples: One, the double cellophane wrap for cigarettes; the other, the triple wrapping for hosiery consisting of three pairs of hose in a box with an interior tissue wrap, a set-up box with a fancy paper exterior and a cellophane outer wrap.

Mr. Sheldon cited specific cases of conserving shipping containers by re-use. One example given was that of a manufacturer who shipped radio cases in corrugated containers in carload lots by cooperating with consignees. This manufacturer has been able to use these shipping containers several times. The speaker said it was only fair to point out, however, that such savings were possible because of the carload shipping which might not otherwise be practical.

"Is concentration a possibility in the manufacture of corrugated boxes and containers?" was another question asked of Mr. Sheldon. The subject was an important topic of conversation and WPB consideration, he replied, but when it was gone into in detail, had died very quickly because for geographical and related reasons in transportation and supply it simply could not be done—so the project was abandoned.

C. B. Larrabee

"What is the prospect for metal closures for food products?" was another query. Producers of essential foods are finding that metal for closures is being made available, was the answer.

In view of the increased use for glass because of metal shortages, "can we look for further limitation orders applicable to that form of packaging?" The answer is, yes. For instance, Mr. Sheldon said, "Grass seed has appeared in glass jars. This probably will not be permitted much longer because a product like that can be packaged in other material, whereas glass may have to be restricted to products which have no alternate packaging material available."

"What is the comparative situation between paper and wood?" "Paper, I believe," the speaker ventured, "will probably be easier than wood."

"Is it likely that we will discover—as Canada has—hidden values for what have been commonly called frills?" "Important in this connection is the sympathetic attitude toward business apparent in WPB," Mr. Sheldon said. Opportunity is offered to establish just such points at the conferences which WPB habitually holds. Representatives from industry are called in to discuss a situation. The problem is put before them and their recommendations are asked for.

At this point, Spalding Black of Canadian Industries, Ltd., was invited to the platform and made the point that the governmental authorities in Canada likewise do not go too far with arbitrary and autocratic mandates. They, too, obtain industry information. He urged more cooperation between competitors to help solve some of the shortage problems.

Another Canadian visitor, Mr. Lorne Cummings of Standard Paper Box, Ltd., of Montreal, was called to the platform to comment on differences in the two countries in the matter of "frilly" packaging. The dislocations in Canada have not been quite so drastic, he pointed out, principally because their packaging had always been simpler and they do not have so far to drop.

SHAPE OF THINGS TO COME

WATSON DAVIS, director of Science Service, Washington, D. C., was speaker at the Tuesday luncheon. Oliver F. Benz, Development Department, E. I. du Pont de Nemours & Co., Inc., introduced the speaker.

Watson Davis

Mr. Davis's talk was titled, "The Shape of Things to Come," in which he forecast scientific development the like of which the world has never dreamed. He covered subjects from atom smashing to week-end air cruises to Casablanca or the Fijis, from synthetic rubber to television and electronics.

"When you try to foresee what the world will be like when the fighting has stopped and we have won victory, it is a question whether you are engaging in post-war planning, post-war hoping or post-war escaping," he said. "We hope we are planning rationally and realistically but the present great surge of enthusiasm for the post-war world may very well be a very human attempt to escape from the bloody present.

"One thing is certain. The transition from a war world to a post-war world will be gradual, with many jolts. We will not all be able to buy that new automobile or television set in the year of Jubilee. We will not be able to burn our ration stamps. We will not all rush down to the airport and reach the ends of the earth in 60 hours for a well-earned vacation as intimated by euphoric advertisements.

"But there are lots of things happening that we all should keep our eyes on. Consider the great industry of packaging. As foil and cellophane have been stripped from our packs of cigarettes, they have been placed on compressed dehydrated food wrappings that defy the mud of Tunisia, the heat of Guadalcanal and the soakings of seven seas. Airplane engines and machine guns are wrapped up with controlled internal atmospheres and delivered more beautifully for the purpose than the most gorgeous Easter basket of the lush days of Harding and Coolidge.

"After all, these war clothes are tailored from the materials familiar to the pre-war years—paper, cardboard, cloth, glue, transparent cellulosic sheets, water glass, pressure tape and the like. This is civilian stuff gone to war like the young men. Not yet of draft age are some new things that may come to the packaging lines.

"Better keep your eyes on the silicones and the methyl chlor silanes, as these most promising organic silicon compounds are known. You can imagine how useful they will be in the post-war era when they come back from the wars.

"There are other materials that are extremely plentiful that we may be using more widely. A sort of clay bentonite, for instance, is a promising raw material from which artificial mica has been made and there is a lot more clay than there are trees. There is little real reason why we can't make aluminum from clay if we have to and are allowed to.

"Plastics is the field for future expansion that most laymen are most enthusiastic about. . . . Some of these new plastics are going to give more competition to the old-line textile fibres, such as cotton, wool, linen and silk if the Japs are ever allowed to produce it again. It is not at all impossible that we shall be clothed in the future with a sort of cloth that needs no weaving. The trick is that the thermoplastic fibres weld together the others. This is no future dream, for a material of this sort has replaced the old-fashioned cloth teabag.

"There are at least a dozen rubbers—elastomers the chemist calls them—in production from oil, coal or vegetable substances from down on the factory-farm. It is very unsafe to tell the chemist you need a substitute for a natural product and give him a chance to produce it because he is usually able to produce something that is better, and in the long run cheaper, than what has been used. Certainly all of the synthetic or artificial rubbers are here to stay for special uses.

"Lignin, partner to cellulose in wood, has been much neglected and can be expected to be more usefully employed as a raw material for plastics. Casein, whether from milk, soybeans or some other product, can give wool a run for its money and double for many plastics.

"Even the atom may be mined for power and we only hope that our side does it first. Even without the miracle of cheap power from the atom, there will be amazing production of power in the future. We are now producing in a couple of months as much mobile horsepower in aviation and auto engines as is installed in America's central stations and that's millions of mechanical horses. The diesel engine, lusty as it is, is still youthful and full of greater promise. We have not yet explored all the real possibilities and practicalities of tapping the power of the wind or the heat of the earth's interior. Transmission of power over short distances via ultrafrequencies has been hinted at.

"To education and research we must look for the distribution and control of what we know and the creation of new knowledge to serve mankind. Knowledge, people and resources—the best that we can hand on to future generations to cherish and enhance—will indeed shape things we dare not reach for today in a disordered, sick world."

VOICE OF EXPERIENCE

Viewpoints of three of the nation's leading consumer industries—from the packaging angle—were presented at the Tuesday afternoon session. The industries included were food, chemical, electrical and pharmaceutical trades, repre-

sented respectively, by F. D. Cummings, of John Morrell & Co., Ottumwa, Iowa; Stanley W. Burnham, Director, Container Dept., Merck & Co., Inc., Rahway, N. J.; Kenneth P. Morehead, production manager, Tung-Sol Lamp Works, Inc., Newark, N. J., and Harold F. Coleman, Director, Package Dept., United Drug Co., Boston, Mass. J. D. Malcolmson, Technical Director, Robert Gair Co., New York, was chairman.

MR. CUMMINGS promised that "the meat packing industry will make a substantial contribution" to Secy. Wickard's declaration that 'food will win the war and help write the peace.' " Citing figures to give an idea of the huge task of packaging, Mr. Cummings told his audience that since March 15, 1941, meats, fats and oils purchased by the Dept. of Agriculture totalled $180,618,247.

"Prior to our entry into World War No. 2," he said, "we had gone through the years streamlining packages, spending hours in conferences trying to decide what color or combination of colors should be used for printing, how we should design the package for greater selling appeal. Today, we are thinking about practical packages, the type of packaging that will deliver our products to the armed forces and through lend-lease channels and, at the same time, conserve the use of packaging materials.

"The specifications for good packaging have changed due to wartime conditions. Prior to the war we wrote package specifications to be good enough to deliver the product under normal conditions. The industry started out filling many government contracts on this basis, which, I understand, has resulted in staggering losses. Today, our government is asking that we write specifications for shipments to meet wartime conditions for destinations sometimes unknown when contracts are awarded. They are asking us to write specifications for civilian packaging to conserve materials vital to the winning of a war."

J. D. Malcolmson

Mr. Cummings paid tribute to the help of those in government authority in solving packaging problems. He stressed the fact that yesterday many of them were key men in some of the largest industries. They are vitally concerned not only in the outcome of this war but also in the daily changes that are necessary to regulate the flow of critical materials in an ever-changing world.

His own company, he reported, had had 25 different sizes of nailed wood boxes for packaged commercial cuts. Today they have standardized on seven sizes, with an approximate net weight capacity of 180 lbs. for shipping cured and smoked meats on lend-lease contracts.

He also pointed out the difficulties his company had experienced in the packing of its dog-food products. Denied the use of cans, they turned to glass, but soon discovered the impossibility of getting continued supplies of rubber and metal necessary for closures. All-paper containers and dehydration were resorted to after even the bonderized plate for ends of fibre cans was denied.

MR. BURNHAM—Admittedly going "out on the limb" to predict some of the developments in the near and the post-war future, Mr. Burnham declared that the packaging field would see many changes. The large varieties of small sizes will be curtailed, he declared. "Why supply a great many packages, using much additional packaging material, when larger sizes will supply the consumption wants and save those materials?" he asked. The various industries will also have to use cheaper grades of paper and board with less "snow-white" bleached materials.

"We will all produce more material," he said, "in spite of the restrictions on packaging equipment." He predicted an increase in the re-use of packaging supplies and of return trips for even smaller size boxes. "But, boy-oh-boy!" he declared, "it will be a great day when this war is over and we can use everything we want that has been developed in this wartime. I'm just hankering to use plastic bottles—they're coming. The surgeon general's department is now using them in field work and they are proving most promising."

Another prediction was that silver would prove to be extremely important in the packaging of chemicals and other vital civilian products in the post-war era. Plastic linings for metal and paper containers, and increased use of laminates (such as those developed for V-Board), he said, will also be forthcoming. The post-war period, he said, would have all industry making more packages in which to pack more products.

Mr. Burnham outlined some of the package developments of his concern and presented a number of samples that have come out of those developments to replace the previous metal containers. Employment of critical materials for civilian use, he indicated, has almost ceased. A corresponding development, he said, was the reduction in the number of sizes and the increased use of round-trip drums for the heavier chemicals. While the industry was generally well satisfied with the fibre drum and is anxious to get more of them, the shortage in this category has forced the return of the metal drum.

He demonstrated the ease and simplicity in setting up some of the paperboard cartons and described some of the heartaches involved in the repeated changes as scarcities multiplied in the switch from metals to glass to plastics and finally to paper. One development attracting considerable interest was the new 5-lb. box with a rip-cord to break the seal and having both a slip-top and an inner cover which must be opened by destroying the inner seal.

MR. MOREHEAD—Some of the intricacies of packaging such a delicate item as a radio tube—which, if dropped a half-inch to a hard surface, would ruin the tube—was described by Mr. Morehead whose firm manufactures incandescent lamps and radio tubes, varying from a half-inch in length to 1-lb. six-inches long radio tubes.

Extreme care is needed in the handling of these items, Mr. Morehead pointed out, not only after production but in the process while the item is still being carried from one point to the other in the plant. Some of the packages have been developed to house the tiny lamps almost from original manufacture to the consumer's hands.

He showed, through the use of charts and diagrams, some of the problems faced by his firm and how they were solved in packaging. How complicated these problems sometimes become, he illustrated with the statement that in designing a package for a lamp, it is necessary only to consider glass and filament breakage. However, for radio tubes, it is also important that the electrical characteristics do not change in transit. There are some types where 20 electrical measurements are involved—all of which must remain constant even after the tube has been subjected to transit hazards encountered in trips halfway around the world.

In many cases, production of some styles of lamps was so small in quantity that development of a special package was

not deemed necessary. They were wrapped in wadding and stuffed into an oversize box. Today the larger quantities manufactured demand special packaging as a means of conserving space in a plane or ship as well as for safety of the item.

The problem of "tote trays" necessary to transport bulbs and tubes from point to point within the factory is often complicated by the tiny size of some of the units. How this is overcome through the use of "split partition" construction within the tray, which eventually becomes a final package for shipment, proved one of the interesting parts of his talk. MR. COLEMAN—Among interesting exhibits was the series of charts, blue-prints and specification forms presented by Mr. Coleman who told how the United Drug Co. insists upon meticulous observance of specifications for packaging. Every part and portion of every package, as well as the contents and enclosures, are outlined and must be observed all along the line. "It is a complicated system," he said, "and yet it makes for absolute control of packaging merchandise and particularly in our field where mistakes are costly to the extent of the possibility of severe illness or even death."

The system has to be followed, for instance, when a packaging change is made from a lithographed tin container to one of paper, or for the change from one type of cap to another. With the increased need for changes, he said, the firm has adopted the decision that packages, when they need to be changed, must be made as simple and standardized as possible. In the matter of costs, he stated that the use of some of the paper packages was more than double the cost of the tin predecessors. The simplification program has been extended to caps where the various lithographed colored styles have given way to a standard white for all the line.

A good many of the simpler types of packages, he said, are now being made in the firm's own print and box shops. Tablet boxes now consist of a plain white drawer which slips into a folding carton. Here, too, a reduction in the design and number of colors has been accepted as an inevitable wartime necessity.

In the matter of medicine bottles, a light-weight bottle had been adopted even before the war and these are now very much in use. The anticipated standardization orders from the WPB may cause some changes in this for his firm as well as others, he admitted, but he declared that if such a change will shorten the war by even an hour, it will be worth the effort.

Many kinds of powders—such as foot powders, antiseptic powders and the like, formerly sold in lithographed cans—are now being put into a plain, cylindrical can with paper top and paper bottom and inside sifter. Development of new containers, he said, would have cost more money and involved time and labor. Lined with some of the better grades of moistureproof paper, these cans will do the job of holding merchandise and carrying it to the customer in a reasonably safe manner.

Dry chemicals, such as epsom salt, cream of tartar, boric acid and the like—previously packed in tinplate—are now packed in bag-and-carton containers. The cartons are printed in United's own box shops and are purchased through the customary source for bags.

PACKAGING INSTITUTE DINNER

One of the high spots of the convention was the annual Packaging Institute dinner, held Wednesday evening in the Belvedere Room of the Astor.

The program was opened by Joel Y. Lund, vice-president of Lambert Pharmacal Co. and president of the Packaging Institute, who introduced Charles W. Boyce of WPB. Mr. Boyce summarized some of the developments and trends in the paper packaging field for the past year and predicted that industry would face still further cuts and possible shortages in supply. He emphasized that the present supply available was about 75 per cent of the normal amount and that this and other shortages were due not so much to material shortages as to the unavailability of labor. He told his hearers that normal material for the manufacture of kraft papers was under close government control and that the supplies for the paper industry were being systematically reduced. Transportation was another bottleneck which the industry faced, inasmuch as a large amount of the pulpwood and timber has to be transported by motor trucks which faced the shortage of gasoline and rubber.

Most of the paper-making energies, he indicated, were going—or would be directed—into the manufacture of kraft papers and V-board for the use of the government and lend-lease shipments. Five or six mills previously shut down, he said, were producing additional quantities of these materials for government purposes.

Mr. Boyce told the packaging trade that the government expected that more could be done in the way of regulation by voluntary action of the paper and board manufacturers than by restrictive orders—the important matter for all concerned being the spreading of the available fibre as thinly as possible. He said that government estimates showed about $15^1/_2$ million tons of paper domestically produced, which is a million tons under the 1941 and 1942 figures.

Excessive use of kraft papers for civilian purposes, he intimated, might be one of the reasons for the gloomy outlook, stating that there was a tendency to specify kraft paper for too many less essential purposes. Degraded materials could and should be used wherever the high quality of kraft wrapping is not needed.

He suggested that a critical review may be in order relative to the over-all packaging picture, declaring that "we cannot afford the luxury of over-packaging." "It is possible," he said, "that a series of actions in different directions will be necessary," indicating that further restrictions may be forthcoming unless voluntary rationing is undertaken by the various packers of civilian goods.

Mr. Boyce was followed by James Young, former manager of the International News Service in Tokyo, who spoke on the subject, "Inside Japan." He told a vivid story of his experiences and of his views. He portrayed the weaknesses and the strength of the people of Japan and urged that a more determined stand be taken by certain Washington officials in their handling of the campaign against that enemy. At the Wednesday morning session, with Albert W. Luhrs of the Container Coordinating Committee of the War Procurement Agencies, WPB, presiding, the topics and speakers were: "Folding Boxes at War" by Walton D. Lynch, vice-president, National Folding Box Co.; "Science in Packaging" by C. A. Southwick, Jr., package research director Shellmar Products, Co., and technical editor, Modern Packaging; and "Packag-

Albert W. Luhrs

ing of Dehydrated Foods" by William W. Black, Research and Development Branch, Office of the Quartermaster General, and Frederick S. Leinbach, assistant director, Containers Division, WPB.

FOLDING BOXES AT WAR

WALTON D. LYNCH—During this period of national emergency it may be a truism to state that everything in the way of materials is short. However, the problem became one of substituting packages of paperboard for those previously made of critical materials, which could be freed for direct war goods and military uses. Before making any specific package recommendations for conversion packaging, it was necessary to become familiar with the physical and chemical characteristics of many products never before packaged in folding boxes.

First approach was the classification of all products in three major divisions: (1) Dry, (2) Moist and Viscous and (3) Fluid Products. By discovering the adverse changes which might impair the usefulness of a large number of specific products and the causes of the changes, the next step was a study of what protection would be afforded by materials other than paper boxboard, such as various types and combinations of kraft, glassine, parchment and greaseproof papers; adhesives and surface coatings and special protective agents introduced into the pulp during the manufacture of the boxboard. Final step was a detailed study of package construction whereby the new materials could be combined into practical containers capable of being produced and used in large volume. There are four major classes of conversion packages, it was discovered: (1) Conventional styles—many products, formerly packaged in critical materials, did not require any more protection than offered by conventional folding boxes, made of regular boxboards, so conversion was both simple and economical to make. (2) Existing special styles made of special proofed boxboards—other products could be amply protected by using existing styles of folding boxes, but made of special-proofed boxboards. (3) Bag-in-a-box styles—an inner bag or liner made of special-proofed materials or materials was inserted or affixed to the inside of a conventional folding box. (4) Specially engineered boxes—when none of the other styles was satisfactory, specially designed boxes were developed. A package representative of Group 1 is the Sir Walter Raleigh smoking tobacco pack. This long-familiar pocket tin was replaced by a conventional glued bottom and regular tuck top folding box, the cartridge of tobacco inside the box is amply protected in its special sealed paper pouch, the federal stamp affixed over the tuck top and the entire pack over-wrapped with cellophane.

Walton D. Lynch

Representative of Group 2 are the fish fillet boxes. For many years both fresh and frozen fish fillets have been packed and shipped in two-piece metal boxes, holding 10, 20 and 30 lbs. each. Now the fillets are packed in paperboard boxes with tight holding tops. When covers are placed on the filled bodies, the ends interlock and the fillets are safe from tampering, pilfering or infiltration of dust and dirt at all times.

Group 3 comprises conversions utilizing the bag-in-box principle. An example of this is the Salada Tea pack. Formerly the tea was packaged in paper-lined heavy metal foil with printed paper band overwraps. Now a glue-end box made of fine clay-coated manila lined boxboard is used. Inner liners are of pure vegetable parchment paper.

An example of Group 4 which demanded special engineering is the McKesson & Robbins aspirin package. The new package has a special locking device which enables the consumer to remove one tablet at a time without spilling the contents.

Collectively, the folding box industry during the year 1942 helped manufacturers convert to paperboard boxes and effected a savings for the direct benefit of the war effort of the following war materials: 215,000,000 lbs. of metals, 750,000 lbs. of glass, 256,000 lbs. of cellophane and pliofilm; 12,000 lbs. of rubber, 8,000,000 board feet of lumber and 1,900,000 lbs. of metal from obsolete printing plates.

SCIENCE IN PACKAGING

C. A. SOUTHWICK, JR.—Science in packaging may be given other terms, such as rationalization, engineering or objectivity, or any other word which means to know, define, measure and to record in numerical values. However, packaging must have this type of activity if it is to make sound and sure progress and is to develop a working fund of knowledge and experience. Packaging itself will benefit since it will do better jobs at lower costs and utilize many different kinds of materials. Good package engineering has been done in both the tin can and the glass fields. Fibre packaging should undergo the same sort of integration.

A package may be defined as a protective, attractive, convenient and low-cost means of delivering goods to the consumer. The most important feature of the package is that of protection, whether it be a package for the purposes of delivering war goods or for peacetime, civilian consumption. The package provides a means of suspended animation for the product—it must deliver the product in the best possible condition to the consumer. It is wrong to believe that when the protective requirements are considered in order to make a package have a specific or high level of performance something of the other attributes must be sacrificed. In many cases, the final cost would be less if the package is properly made, because returned goods will be reduced and it is even possible to make the initial cost lower.

Attractiveness and convenience can be worked in together with protection—there is nothing incompatible in any of these functions. In order to have protection in a package, there must be scientific development and evaluation of the package as a whole—as a final formation, aside from the material from which it is made. The complete package is always degraded from the material as tested. Sealing, folding, creasing, etc., all have some effect upon the material. It is the final summation of the material and what has happened to it in being formed that is the package, that determines package performance.

In order to engineer a package for a given product, the composition and characteristics of that product must be known. For example, there is no general answer to the question, "What is the best packaging material for frozen foods?" There isn't any such thing. Packaging has to be done specifically. There is no one over-all answer.

In order to know a product, it is not necessary to know the specific formula, but an approximation of it. What is it you

want to protect in the product? When the composition of a product is known, then the kind of protection and to some degree the quantity of protection is understood.

Second, it is necessary to know how the product is to be merchandised and stored and the size of the package. When this is known, then the degree of protection necessary may be concluded. These two sets of facts determine the kind and the degree of protection required and constitute the performance specifications for the package.

Consideration three is packaging engineering itself. For this the package maker must have data on materials and on package forms. The specifications for the package have been set up by consideration one and two—the product, and the kind and degree of protection required. The materials he will use and the form of his package will be determined by these first two considerations.

Following are tables which show the effect of temperature and humidity upon packaged goods. Actually 100 per cent humidity is rarely encountered, especially at elevated temperatures, but it is still possible under some conditions in the tropics or the far south. The final effect of temperature and humidity depends upon the product and the particular package selected. For example, moisture vapor goes through the package structure by two means—through the mechanical openings or porosity of the package, that is, poorly folded corners, unsealed liners, etc., or by direct migration through the packaging material. Values in these tables show the pressure which the water vapor is exerting in an endeavor to get to the product inside the package.

TABLE 1

EFFECT OF AIR TEMPERATURE AND HUMIDITY ON PRESSURE OF MOISTURE VAPOR

	Per Cent Humidity, Mm.		
Temperature, °F.	100%	75%	50%
0	1.0	.8	.5
32	4.6	3.4	2.3
50	9.2	6.9	4.6
70	18.7	14.0	9.4
100	49.0*	36.8	24.5
120	87.5	65.7	43.8

Values in millimeters of mercury.
* Equals about 16 ounces per square inch.

It is apparent from the above that if there is mechanical porosity in a package, it can be used only for a limited number of products which are not very hygroscopic or which will not be exposed to high temperatures and high humidity.

TABLE 2

EFFECT OF PRODUCT AND AIR HUMIDITY ON FLOW OF MOISTURE VAPOR AT 70° F. AND 75% HUMIDITY

	Assumed* Equilibrium Humidity, %	(1) Pressure of Moisture Vapor Inside Pkg., Mm.	(2) Pressure of Moisture Vapor in the Air, Mm.	Differential for Moisture Vapor Flow Col. (2) − (1), Mm.†
Plastic coconut	80	15	14	−1
Flour	70	13	14	+1
Dessert powder	50	9.5	14	+4.5
Beverage powder	30	5.5	14	+8.5

* The equilibrium humidity is that value of the humidity at which the product neither gains nor loses moisture. These particular values are very rough approximations to simplify the problem.
† A positive value (+) means the product will gain weight. A minus value (−) means the product will lose weight (i.e., moisture).

From Table 2 it is seen that as the equilibrium humidity of the product is greater, that is, of higher value, under some conditions the product can lose moisture as well as gain, but that with products that are extremely hygroscopic, or have a low value for their equilibrium humidity, there is very little possibility of the humidity ever coming so low that they will not be gaining some moisture. The table shows why hygroscopic materials need to be packaged with better seams and with better packaging materials than for products which are not hygroscopic.

TABLE 3

EFFECT OF TIME

10-lb. package instant cocoa (bag in carton)
Original moisture content 5%
Moisture content to begin caking 10%
Package test has shown an average gain of 0.25 ounce per week at 70° F. 75% humidity.

The final shelf life of a package depends upon its rate of moisture pick-up, multiplied by the time. That is why it is also important to know whether a product is being merchandised so that its rate of turnover is small. If the package has some rate of moisture gain and the time is sufficiently long, the end result is the deterioration of the product.

TABLE 4

EFFECT OF PACKAGE SIZE

Contents, Oz.	Package Dimensions, In.	Surface Area, Sq. In.	Surface Area per 1 Ounce of Product
1	3 × 4	24	24/1 = 24 sq. in.
6	3 × 4 × 1	38	38/6 = 6.3 sq. in.

From Table 4 it is seen that for a given product the moisture-vapor transmission rate of the packaging material will depend upon the size, assuming, of course, that in general the seals and sealing methods are comparable.

PACKAGING DEHYDRATED FOODS

WILLIAM W. BLACK—Food must be processed in order to preserve it. This fact, of course, is not new. There are a number of methods of processing, but the familiar one is that of heating and preserving in a certain water content. This type of processing requires metal containers. Today metal containers are scarce, so scarce, in fact, that instead of processing for canning, we must dehydrate since dehydrated foods, for the most part, don't require metal packaging. Some of the advantages of dehydration are: (1) Maximum food content is retained—all waste, such as stems, peelings, etc., is discarded. (2) Maximum food values are retained. The food is dehydrated at the source of supply. The process of dehydration is such that the values in vitamins, minerals, etc., are kept as intact as possible. (3) Dehydrated food is ready to serve. Reduces meal preparation time and effort. (4) Conserves critical materials in packaging.

Dehydration has had a hard uphill climb because acceptance of dehydrated foods by both public and the government meant a break with traditional methods of processing and packaging. Established business and plants had over a long period been concerned chiefly with the canning or glassing of foods. But since dehydrated foods can use flexible mate-

rials, the suppliers of those kinds of materials can and have been giving attention to dehydration.

Since last year considerable progress has been made in the field of dehydration. In the government there is a joint dehydration committee which serves as a clearing house of information about production, methods, standards, and serves to promote and stabilize dehydration as a permanent industry. There has been general progress in the techniques of dehydration and today the term "quick drying" is preferred. Much research has been done and there are laboratories at the University of Texas, University of California, Cornell, University of Chicago, among others, where experiments are being carried on.

Cooperation with Great Britain has brought about a valuable exchange of ideas not only on methods of quick drying but on consumer acceptance of products. Since dehydrated foods are being used in lend-lease, material is being gathered from all the Allied Nations about these products.

A new factor has entered recently which the needs of war have brought about. Space must be saved in every means of transportation, so the bulk of foods had to be reduced. Experiment showed that food could be increased in density—compressed—to save great amounts of space. The trend is definitely towards compressed dehydrated foods because of this fact as well as a number of others. It has been found that compression increases the durability of the product and that it is easier and faster to package. The government in its work on compressed dehydrated foods has been helped by the Auto Ordnance Co. of Greenwich, Conn., Pneumatic Scale Corp., Ltd., North Quincy, Mass., and Cambridge Tile of Cincinnati. The general feeling is that compression is well on its way and that there are good post-war possibilities in compressed dehydrated foods. These foods have already been sent to England and the reactions to them by those who are using them are being gathered to improve further these new type foods.

FREDERICK S. LEINBACH—Packaging of dehydrated foods must take cognizance of two viewpoints—that of the food dehydrator and that of the package and package material supplier. First to be considered are the factors governing the design of any functional container. They derive from three sources:

1. The characteristics of the product, that is, an exact knowledge of what things affect it and at what rate their effect.

2. The terms of storage and delivery—a knowledge of which of those things affecting the commodity, the container will have to resist, in what degree and for how long.

3. The characteristics of available container materials—a knowledge of how they resist the things affecting the commodity and how effective their resistance and their durability.

Regarding the characteristics, dehydrated foods are subject to deterioration through the following factors, though in varying degree, according to the particular food: (a) temperature (which cannot be controlled through packaging), (b) increase of moisture content, (c) oxidative change, (d) insect infestation, (e) contamination by foreign flavors or aromas and (f) loss of fats or oils through the container material.

Of these factors, the first three are prime considerations. Grouped on this basis, the three general categories of dehydrated foods are: (1) Those that require high level of protection against moisture and protection against oxidative change: (rancidity, loss of vitamin content) meats, whole milk, carrots and cabbage; (2) those that require a high level of protection against moisture, but not so positive protection against oxidative change—tomato juice cocktail and similar tomato products, onions, apple nuggets, cranberry flakes or powders, dried skim milk, fruit powders (prune, apricot, lemon, etc.), soluble coffee; (3) those that can tolerate a lesser level of protection against moisture and do not require special protection against oxidative change—dried whole eggs, rutabagas, white potatoes, sweet potatoes, beets, dehydrated soups deriving from most vegetables.

A package suitable for overseas distribution must be capable of withstanding the heat and the high humidity of tropical countries, it must retain its protective qualities through much rough handling and transshipment overland on the other side and during storage without the benefit of warehousing. The durability requirement on packages for most dehydrated vegetables is much increased by the fact that those products are very hard, sharp and abrasive. The Quartermaster Corps of the Army has felt, under these circumstances, that the first two categories of dehydrated food, need the protection offered by rigid metal containers, hermetically sealed. If the package is thoroughly sealed and if outside of the sealed barrier it is free from food particles, infestation is minimized. Contamination by foreign flavors and aromas and loss of fats and oils are fortunately controlled well by virtually all of the materials that happen to meet the other requirements.

The third category of dehydrated food may be packed in a replacement container, approved by the army. It consists of an initial container made from low-test corrugated board or equivalent solid fibre which is closed and sealed so that the abrasive "fines" of the product cannot sift out. The inner package is then encased within the moisture barrier, which is a heat-sealing pouch type bag made from a material having a very low moisture-vapor transmission rate, the barrier is closed, using any method that will exclude excess air and keep the pouch from appearing like a pillow, and it is heat-sealed. It is then placed in a solid fibre box, which upon closure completes the package assembly. Two package assemblies are packed in a strapped, nailed wood box.

Many advantages are to be gained in packaging from compression of dehydrated foods. Compression yields a product of regular size and shape, an obvious advantage. Under given conditions, a given moisture barrier will transmit each day a certain amount of moisture per unit area. Thus, if a product is compressed, the same amount of product is enclosed in a lesser area and, since the tendency of the product to pick up moisture remains the same, the lesser area exposed has the same effect as increasing the effectiveness of the packaging material over its performance on the uncompressed product. Dr. Haines of the British Food Mission reports work in England indicating that compression of meats may develop to the point where so much of the air between the particles is excluded, thus reducing the relative amount of oxygen present in proportion to the meat, that vacuum packing may not be essential to fairly long term storage. Whatever the packaging material used, less of it will be required per pound of compressed product because of the reduced surface of any given weight.

Anyone contemplating a long term program in dehydration of foods, and all dehydrators should be contemplating a long term program, definitely should count upon compression as part of that program.

One of the most important considerations in packaging dehydrated foods is their value. In wartime, the worth of food to fighting forces is beyond evaluation in dollars. Even overlooking the tragedy of food spoilage when food is so badly needed, it can be seen that the dollar value of just a small percentage of loss would soon be more than the over-all cost of extra packaging protection.

WHAT ARMED FORCES WANT

In a session packed full of "What kind of packaging do the armed forces want?" and "How best can the armed forces and packagers get together?" questions flew back and forth that will undoubtedly result in closer coordination between the government and those who are trying to give the government what it wants.

E. A. Throckmorton

The meeting was presided over by E. A. Throckmorton, Director of Sales Research, Container Corp. of America, Chicago, who acted as interlocutor between the audience and a panel of nine government representatives. The government men from Washington were: Eldo Tomiska, Deputy Director, Containers Division, WPB; Lt. Col. Frederick F. Berlinger, Office of the Quartermaster General, War Department; James D. Studley, Office of the Surgeon General, War Department; Andrew W. Loebl, Office of Lend-Lease Administration; Major M. J. Odell, Chief, Packing and Packaging Division, Services of Supply, War Department; Phillip Kennedy, Acting Chief, Containers Division, Office of Procurement Material, U. S. Navy; C. R. Joslin, Head, Contractors' Service Unit, U. S. Dept. of Agriculture; Herbert T. Holbrook, Packaging Section, Office of Chief of Ordnance, War Department; Harold Jahn, Chief of Packaging Section, Research and Development, Interior Packaging.

Perhaps the most interesting question and most difficult to solve on the part of both government and industry was the question: "What needs special attention now?" Some of the answers, given by the government men are as follows:

A dehydrated vegetable container. The present container is only adequate for certain things. A container that will withstand temperature of from −20 deg. to 120 deg. is sorely needed.

Substitute for a tin can.

Needed quickly is a better package for fruit powders. Lemon crystals are now overpacked twice, but still not satisfactory. Trouble may not be in the package. Experiments are being carried on to determine whether or not the trouble may be temperature at time of packing.

Another wanted food package is a 4- or 6-oz. bag for apricot and prune powders, cocoa, dry skim milk. Either a rectangular or square package will do—nothing so far has been satisfactory. Another non-metallic package for shortening and cheese is also needed and also a better package for a dry soup powder.

A better, non-poisonous, barrier or insect-repellent package is wanted. The University of California is working on the job. So far nothing has been capable of resisting the insect attack of South Pacific bugs. A smooth package with no tucked-in corners would be most desirable.

A new dipping material, not necessarily wax. Something that will not bleed in at 130 deg. Also wanted, a machine to put it on that will cost not over $750 and use a minimum of critical material.

The Ordnance Dept. is most worried over corrosion problems. Best story of the afternoon was told by Mr. Holbrook about a boxed vehicle that was in storage or movement for six weeks. When opened a mother cat walked out with six kittens. She had lived by licking off the preservatives.

There are 55 different ordnance items which can't be preserved with heavy grease. Some substitute must be found. The Department wants hundreds of thousands of yards of moisture-vaporproof materials that are heat-sealable, tough and contain few critical items.

In addition, the Ordnance Dept. wants a greaseproof wrapper that is more satisfactory than anything now on hand.

Waterproof barriers such as bags and linings are still not satisfactory, according to Mr. Holbrook, and the Department is especially eager to discover a better adhesive.

The Navy representative said his department was quite concerned over the tendency to ship in commercial containers. Some of the old contracts allowed this procedure, but contractors working under such specifications should get in touch with the Navy at once. Commercial containers are simply not satisfactory for wartime export.

Packing of specialty equipment such as X-rays and other medical goods require extra special packing. Mr. Studley asked that industry men come to his department with any ideas they have which will facilitate shipment of such equipment. The department has something like 8,000 items on its schedule and cannot write new specifications for each and every one of them.

Major Odell called attention to the new Army-Navy specs, 100-14A, but said they didn't answer all packaging problems by any means. They are only a general guide to development of examples where there are no detailed specifications. They do not in any case supersede particular specifications that have been drawn up on particular items such as ammunition which comes under detailed, separate specs.

Industry men were urged to communicate with any of the men represented on this panel if they had any doubt about the possibility of their product getting to its destination in a usable condition in the prescribed package. Batteries shipped to Guadalcanal might just as well be left at home if they are water-logged when the Signal Corps opens them up and expects immediate service.

Major Odell spent considerable time telling why army specifications for shipping are necessarily much more rigid than peacetime requirements. Careless handling, undermanned ships, extremes of heat and cold, humidity that penetrates wooden boxes with more severity than rain and actual battle conditions are only a few of the hazards that packages must overcome. He stated that the specs may sometimes seem screwy and inconsistent to producers, but the job of providing specs for each item among thousands is simply too big for a small staff to do without making mistakes and urged that contractors call attention to obvious or suspected errors whenever they could be spotted.

Lt. Col. Berlinger added to this particular point by stating that the personnel of the packaging sections of the Quartermaster Corps is made up largely of officers and engineers taken from industry. The greatest trouble is not in proper packaging, but in trying to find enough packaging engineers to do the job. He urged that all employers impress their workers with the importance of doing a super-packaging job.

The biggest laugh came from the question, "To what agency shall I go after being shoved all around Washington?" But the government men took it seriously and did their best to answer.

Mr. Tomiska suggested that interested parties go first to the Containers Coordinating Committee, Building S, where container ideas from all the various agencies are assembled. But don't stop there. The man with an idea should consult the containers branch in the Signal Corps, Ordnance, Navy, quartermaster and all other branches. The proper place will largely depend upon the kind of product he wants to sell.

Major Odell shouldered a huge burden by suggesting that if a person doesn't know how to find the proper branch in the army, to call on him in the Pentagon building and he will endeavor to send him to the right place.

Mr. Loebl suggested that after every other possibility has been exhausted, it might be well to try him in lend-lease.

Other questions and answers were as follows:

Q. How are sulfa drugs packed? A. If in bottles for hospitals, about 5,000 to unit. If in first-aid kits, 8 to unit. If powdered, in small sifter top, protected with duplex, laminated sheet.

Q. Is metal strapping required on export containers? A. Largely so, but there has been much improper application. Q.M. trying to acquaint contractors with proper method. Prefer round wire on wood and flat on fibre.

Q. What determines whether or not a product shall be packed in tin? A. Importance of the product and availability of tin.

Q. How is blood plasma packed? A. Depends on destination. However, it must have a tin outer container because of necessity for vacuum between outer container and glass bottle containing plasma. The distilled water bottle accompanying each plasma bottle must be packed same way.

Q. How are bandages packed? A. Changed specifications are now in the making. Must be kept dry and in an absorbent condition. Trying new V-board container with waterproof bag liner.

Q. Is there a shortage of glass? A. Yes. Now 7 per cent oversold. Will be further standards and limitations.

Q. What ordnance items can be shipped in fibre boxes? A. Comparatively small number. Limited to outer containers for only such items as canned goods, cleaning fluids, anti-freeze and such items as can be further protected by inner packing.

Q. Will there be enough paperboard containers to meet essential need? A. "Essential" is an abused word. Any product permitted to be made deserves a container. WPB hopes to find enough. Twenty-five per cent has been set aside for V-containers—the problem is to find enough to take care of other needs. Production has risen in last three months. But need to replace wooden boxes is growing because wood as well as pulp is a manpower problem. May get enough jute production to offset smaller kraft production. Some form of essentiality may be established.

Q. Do navy requirements differ from army? A. Yes, in some respects. Service is sometimes tougher. Must go to advance bases where handling facilities are bad, outdoor storage required and general tough situation is involved.

Q. Why is there a box shortage? A. Manpower and increasing need. Some suppliers may be loaded up with orders—Tomiska urged shopping around to find one that isn't. Plywood shortage may be eased by allocation of additional equipment. Keep up the hunt for a substitute.

Q. Does the Quartermaster require use of cement-coated nails in boxing? A. Yes—new specs will soon be issued covering any that have been missed.

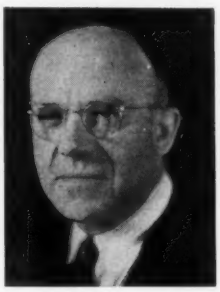
Q. Must I make my own tests before submitting samples? A. Yes, whenever possible. Q.M. will furnish specs for tests necessary to all those who will write.

Q. Is V-board standing up to expectations? A. Not enough has been shipped to determine best results.

Q. Must medical shipments go in wood? A. Medical shipments of bottles will continue in wood for some time. Most other items will probably continue to be shipped in wood with corrugated or fibre lining.

SHORT COURSE IN WAR PACKAGING

The entire third day of the conference was devoted to a short course in wartime packaging conducted by representatives from the Forest Products Laboratory, Madison, Wis. Lectures, illustrated with demonstration material and slides, were based on a five-day seminar held regularly at Madison and covered essential points in export packaging backed up by the Laboratory's wartime experience and 30 years' research in shipping container principles.



T. A. Carlson

The speakers were T. A. Carlson, Chief, Division of Matériel Containers, Forest Products Laboratory, who also acted as chairman at the morning session in the absence of Carlile P. Winslow, Director of the Laboratory, who was unable to attend; G. A. Garratt, Chief, Division of the Laboratory's Technical Service Training and professor of lumbering at Yale University; H. B. McKean, wood technologist, Division of Technical Service Training and Assistant Professor of Wood Technology, Louisiana State University; W. A. Piper, Associate Engineer, Division of Technical Service Training.

Points of discussion covered the use of fibreboard, wood, cleated plywood and wirebound cases, techniques of weather protection and corrosion prevention and interior packing. Textbook background was the new "Army-Navy General Specifications for Packaging and Packing for Overseas Shipment." This book, prepared by the Container Coordinating Committee of the WPB, consolidates the specifications and requirements of the Army, Navy, Department of Agriculture, Treasury Department, Lend-Lease, WPB, War Shipping Administration and Office of Defense Transportation. Copies of the specifications manual were made available to those in attendance.

Introduction to the short course was presented by Mr. Garratt. He outlined the complicated requirements of wartime export packaging, the need for packaging that will withstand every method of transportation—truck, rail, ship, plane—even the backs of animals. He spoke of packaging which must be transferred successfully from one type of transportation to another with speed and in spite of inexperienced labor. He mentioned how the requirements for each means of transportation differ. Weight limitations are essential for the cargo plane, for example, whereas cubic displacement is all-important on a ship. He listed the general considerations that must be taken into account when a shipment is planned: (1) nature of contents, such as liability to breakage, corrosion, etc., (2) size and weight restrictions, (3) ease of handling and storage, (4) availability of packaging materials.

Mr. Garratt pointed out the importance of adapting container sizes to the requirements of transportation facilities.

Cargo plane shipments should not be larger than will go comfortably through cargo plane doors. Matériel that moves on flat cars must not be too high or too wide for clearance on bridges, in tunnels, around curves in the track, etc. Length of crates to be loaded into cargo holds of ships should not be more than 30 feet. Otherwise, the crate must be tipped.

He emphasized many times the necessity of saving cubic space on ships. Sometimes, this may be done effectively by disassembly. In one instance, four containers were designed

to take the place of a single one for an aircraft disassembly. The use of these containers for a month's aircraft production would be equal to a saving in cubic displacement of 2,500 flat cars or 14 cargo ships.

Packers were cautioned not to put too heavy loads in containers not designed to hold such loads.

Mr. McKean covered the subject of cleated plywood and wirebound boxes. He described the construction of such containers, the recommended styles for export, how they are weatherproofed and made resistant to mold and insect infestation, how they are closed, devices for twisting wire closures and gauges of material found most satisfactory.

Mr. Garratt returned to the platform to discuss nailed wood shipping boxes. He described the styles approved for export and explained the relative strength of various types of cleats. He also described the various types of wood for this purpose and methods for treating nails.

The afternoon session opened with a discussion of methods of packing to prevent corrosion. This was conducted by Mr. McKean, following a film showing damage to motorized equipment caused by corrosion.

Of all the reported damage to matériel shipped to China, he said, 90 per cent was due to corrosion and 10 per cent to faulty packaging. Every precaution to prevent corrosion is vitally important because of the tremendous amount of outdoor storage. Even in this country, much equipment is stored out of doors, because of a shortage of warehouse space and production schedules ahead of shipping capacity.

He outlined procedure for the two methods of preventing corrosion—Method I by means of coating with a preservative and Method II by dehydration.

Mr. Carlson discussed the use of fibre and corrugated containers for both interior and exterior packaging. He outlined the various applications, the methods for testing the weatherproofness and strength of board, styles of boxes used and methods for closing them. He also described the use of waterproof bag liners used inside this type of container.

Mr. Piper's talk concerned the designing of efficient shipping crates, particularly for the protection of large items which require special framework, and for delicate materials and unusual shaped items which must have specially designed shipping protection.

TOUR OF EXHIBITS

A glimpse into the luxuries of a peacetime future was afforded American industry at the Conference. More than 50 leading firms in the packaging field presented their products throughout several hundred square feet of space, but contrary to customary annual exhibits, which seek the patronage of potential customers, the 1943 exhibit was an exposition of accomplishment.

It was evident that, just as the lessons in luxury learned in peacetime have served to implement packaging as a tool of war, so the stern lessons learned in the wartime packing of military rations, medicines and materiel will be of inestimable value when these methods and materials can once again serve to enhance civilian goods. To describe in detail all the many items exhibited would be impossible in the space available here—the number was legion. Many, of course, have made their appearance in one guise or another at previous expositions of the AMA, but some of the new sheetings, laminations, adhesives, fabrications, corrugated and fibre boards were a revelation. The machinery division, almost wholly devoid of strictly new presentations because of the restrictions on the use of metals for experiment and development, was conspicuous largely by the very obvious turning of plowshares into swords.

To the military dictum of "git thar fustest with the mostest" has been added the admonition of "and with the best materials." This has been made possible in the present war to a large degree by one of the firms' exhibits of metal foil, asphalt laminated to fabric and kraft sheetings. This combined sheeting has been successfully used for varied purposes from packaging a book of matches or chewing gum to protecting machine gun assemblies.

One of the inevitable chores of the past war was the cleaning of freshly shipped-in rifles, machine guns, motor replacement parts and other articles necessary to the pursuit of the war. Exhibits at the exposition spotlighted the new moisture-proof wrapping made possible for such items.

Another firm, now on 100 per cent war production basis, demonstrated the peacetime possibility of wrapping fruits and vegetables directly and individually in a rubber hydrochloride sheeting. This means that civilians will be able to receive such foods fully tree-ripened from Florida, California or South America rather than the green-picked fruits which have "ripened" during shipment. Vegetables so wrapped would remain garden-fresh long after their normal season has passed and some of the vitamins hitherto lost in food processing would thereby be retained. Of course, such wrapping of fruits got a start just before the war, but government demands for rubber hydrochloride sheeting stopped all civilian development.

This type of sheeting is, of course, almost exclusively used today for the wrapping of entire airplane motors, through the dehydration process, of machine parts and foods for military use.

Wrapping, filling and sealing machines, which today package bullets automatically, received a large amount of attention as did other machines now used to package military supplies, from bandages to compressed dehydrated food units. Plastics in their wartime role as packages for machine parts brought back memories of when the same materials—rigid and flexible—served no more warlike purpose than keeping a powder puff attractive and clean.

Wooden boxes, too, had a military air to them and were demonstrated in their wartime guise. Glass containers, closure and sealing materials and many other similar items, now serving in their normal habits for wartime purposes only, were presented with a "think-of-us-when . . ." note. Aluminum, newly developed for heat-sealing purposes, is now used for such packaging as a single serving of prepared coffee for the soldier's ration kit. This material will have innumerable applications when it can be used once more for civilian purposes. It is possible, a demonstration revealed, to take an aluminum thermo-sealed package into rarefied atmosphere comparable to a height of nine miles aloft without loss of its airtightness. The material tears before the seal will burst.

Adhesives to withstand soaking in surf or rain, to hold under all extremes of heat and cold to a point where the material will tear before the adhesive gives, were also shown to the packaging world and the interested public. One of the adhesives manufacturers attracted no little interest with a series of dioramas which showed graphically the various conditions under which wartime glues must make good.

If tales of the accomplishments of American-packaged goods—surviving drops from airplanes with or without parachutes, submersion or immersion in the surf, rescue from ice and snow of Murmansk or the Caucasus, survival in Africa's heat—have been doubted, a skeptic's trip through the exposition would have made an enthusiast of him almost at once.

MODERN DISPLAY

MERCHANTS LIKE RATION AIDS—

Americans have been accustomed all their lives, for the most part, to consider the United States the land of plenty. Rationing, therefore, is a particularly strange procedure with which to cope. American housewives, whose pantries and refrigerators were filled with a wide variety of food products for their daily carefully planned meals as well as for those guests who might drop in unexpectedly for a meal, had suddenly to think in terms of food restrictions. They needed help to plan menus that would give their families all the necessary foods under the point system. The daily press came to the rescue with excellent food pages. Manufacturers of food products gave their aid to the American housewife, struggling to budget her ration points, by carrying advertisements in newspapers and magazines that were simple and informative. These manufacturers were right on the spot, too, at the point of purchase with counter cards, window units, banners and other display material which explained how to make certain foods go further, how to use ration points.

One company which is using timely and particularly effective display pieces is the Charles B. Knox Gelatine Co., Inc. The pieces have one point only to make—the use of gelatine as a butter extender. Prior to the rationing of butter, few if any family marketers seriously considered ways of extending butter. There was plenty of butter and, for the most part, it was reasonably priced. Today one pound of butter must serve the family for a considerable time. A little butter must be made to go a long way. Knox's gelatine has been found capable of making one pound of butter into a two-pound butter spread that may be used for most butter needs. This fact is brought out in banners that are placed on store windows and in small counter cards. The banners picture a young woman with two pounds of butter on a plate and a package of Knox gelatine is shown in the lower right-hand corner of the banner. Counter cards not only have the women with the two pounds of butter and the package of gelatine, but they also have attached to them a pad of recipes. The customer is invited to take one of the free recipes which tell her how to make the spread. She may make it if she has only a quarter pound of butter to combine with the gelatine and the milk.

These pieces that stress their single point so effectively through a need that has arisen out of rationing are welcomed by the merchant who thus has an opportunity of selling related items of rationed and non-rationed foods. Although the banners point out there is a saving of money in using the extender, this is subordinated to the general theme of how to make the butter ration go further. By tying up its display of Knox gelatine with as universally needed and used a product as butter, the Knox brand has increased the number of people familiar with its gelatine tremendously. Once the housewife has the gelatine in her kitchen, she will use it in a wide variety of ways.

The release of the display material was keyed to the release in magazines and newspapers of advertisements. When the housewife, after reading the ads, went to her market and saw her grocer featuring this use of gelatine, she was prepared to buy a package and to follow the recipe.

Left. The counter card pictures a young woman with her 2 lbs. of butter which she has made from one pound by using the Knox Gelatine as an extender. A package of Knox Gelatine is shown next to a pad of recipes, which invites the shopper to "take one." Below. The banner stresses the Knox Spread in the same way as the counter card—as a butter extender. To get the housewife inside the store or to get her to ask for the gelatine, the banner suggests that she get one of the recipes from her grocer.

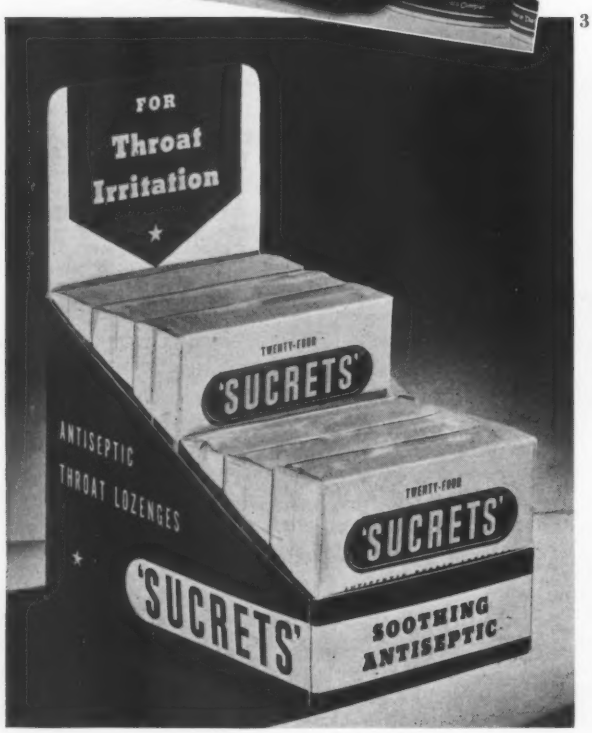
1

1 Spring cleaning as an opportunity for collecting scrap vital to war is dramatized in the P. Ballantine & Sons display. An additional card, attached to the main unit by a length of red ribbon, lists salvageable materials sought for war conversion. Third-dimensional effect is achieved by a hinged leg and foot which swing out from the background. Made by Einson-Freeman Co., Inc., Long Island City, N. Y.

2

2 This three-color card features Quaker Oats for use as a nutritious meat extender. It illustrates what the company calls "Quaker's Extender Meat Loaf" and there is provision made for the retailer to show a price for both ground meat and Quaker Oats—which are what the recipe calls for. Shoppers are invited to help themselves to the free recipes for the loaf, which are attached to the card. Displays have had good acceptance because they offer a desirable way for the homemaker to stretch meat and yet retain a good measure of proteins and vitamin B_1.

3 Sharp & Dohme's Sucrets are now supplied in a trim, new, duration package, cellophane wrapped. Product name on the package is extremely legible and this legibility is likewise an outstanding characteristic of the redesigned, blue and yellow counter display carton which contains six boxes of the throat lozenges. Package and display carton, Edwin J. Schoettle Co., Philadelphia.



3

4 The clerk is able to use this Anacin display stand as a dispenser since there is provision made in the back for the insertion of packages—3 cartons of Anacin 12's and containers for 30 tablets. The display is shipped in the chipboard carton, shown at the bottom of the photograph, which has illustrations on how to set up the unit. Lithography, American Colortype Co., Clifton, N. J. Shipping carton, Keystone Folding Box Co., Newark, N. J.

5 Life-size figure and giant packages are the important features of this window treatment for Dr. W. B. Caldwell, Inc. The display was created to present the company's new modernized package. Small figures are used in mass window arrangements such as that illustrated or on counters and shelves. Displays made by Zipprodt, Inc., Chicago.

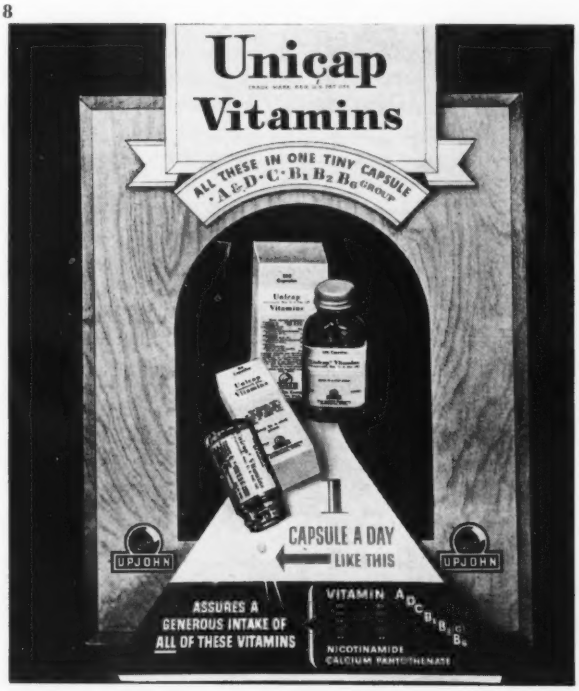
4

6 Installing this display is one of the young women of the Kolynos display installation staff. Manpower shortage has caused Kolynos to break with precedent in hiring women for its display installation department. Before hiring an applicant, the company sends her out with one of their experienced window trimmers. After a day spent among the trade, the applicant has a far better idea of what will be required of her. It usually requires from one to three months before she starts working on the same basis as the average display man. Their experience has proved that women can do an excellent job of display installation. The experience of Kolynos may prove helpful to other companies.

7 Precision performance and five popular uses of Higgins inks are emphasized by this window card. It is lithographed in three colors and black and bears illustrations made with Higgins India ink. It was designed especially for use by dealers who sell exclusively to engineering schools where waterproof black ink is required. Made by Keystone Lithograph Co., New York City.

8 In this interesting counter display for Upjohn Uncap Vitamins, third-dimensional construction is employed most effectively for dramatizing the packages and the "1 capsule a day" story. Made by Forbes Lithograph Mfg. Co., Boston.

8



5

6

7

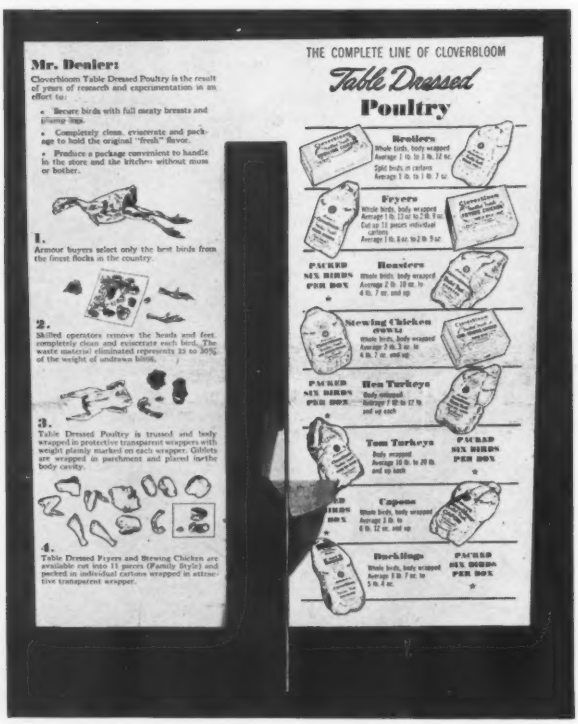
COUNTER CARDS

For Inexperienced Help

What happens to point-of-sale promotion when practically all the experienced help in a market has gone into the services or left for jobs in war industries? Just what is the effect of shortage of competent sales persons on general business? Every producer of merchandise wonders how his products are being handled by people who are unfamiliar with his line of goods and those who are even not very well acquainted with any sort of selling in stores. In connection with this war-posed problem, Armour and Co. studied a rather extensive survey that was made a number of months ago by an executive of the *Progressive Grocer*. This was a survey of stores throughout the east to determine the effect upon business of a shortage of competent personnel. One of the most striking facts brought out by this study was that in the majority of stores, so-called "green" help was responsible for a general lack of store cooperation with any national promotion. This was not because the help did not want to be cooperative, but because these people were not acquainted with the merchandise they were selling and were not interested in the advertising efforts of manufacturers.

Evidently what was needed, Armour decided after going over the survey carefully, was a kind of aid for these untrained sales people. It had to be the kind of aid, too, that was always at hand, that could be obtained at a glance, that would serve both sales help and consumers. The most logical solution was the creation of counter cards for the meat counters of grocery stores and markets. Instead of having a card with information and illustrations for consumers only, a card would do double duty and contain material for the person behind-the-counter as well as the shopper. The back of cards, which are seldom if ever used, afforded space for whatever material Armour felt was most needed by those who waited on customers. Selling information was printed on the backs as a sales aid for new help. A clerk who had never previously worked in a meat market could set up one of the promotional display pieces and could discuss a particular complete line of Armour products with any shopper, as all this material was made easily readable.

A counter card on poultry tied-in with advertisements of Armour's Cloverbloom table dressed chickens. On the front of the card, for the consumer's benefit, are an appetizing picture of a plate of fried chicken, an illustration of a young woman ready to prepare the chicken, and the selling theme, "Save 30 minutes on your chicken dinner!" Information on the product and its packaging is also given on the front of the card. On the back of the poultry card are listed all the selling points on Cloverbloom table (*Continued on page 112*)


Mr. Dealer:
Cloverbloom Table Dressed Poultry is the result of years of research and experimentation in an effort to:
• Secure birds with full meaty breasts and plump legs.
• Completely clean, eviscerate and package to hold the original "fresh" flavor.
• Produce a package convenient to handle in the store and the kitchen without muss or bother.
1.
Armour buyers select only the best birds from the finest flocks in the country.
2.
Skilled operators remove the heads and feet, completely clean and eviscerate each bird. The waste material eliminated represents 25 to 30% of the weight of undrawn birds.
3.
Table Dressed Poultry is trussed and body wrapped in protective transparent wrappers with weight plainly marked on each wrapper. Giblets are wrapped in parchment and placed in the body cavity.
4.
Table Dressed Fryers and Stewing Chicken are available cut into 11 pieces (Family Style) and packed in individual cartons wrapped in attractive transparent wrapper.
THE COMPLETE LINE OF CLOVERBLOOM
Table Dressed
Poultry
Broilers
Fryers
Roasters
Stewing Chicken
Hen Turkeys
Tom Turkeys
Capons
Ducklings
PACKED SIX BIRDS PER BOX

Above. On the face of the counter cards are shown appetizing dishes made with Armour's meat products. Special emphasis is placed on the short time needed to prepare the meals. Left. This is the back of the card for Cloverbloom poultry, showing the inexperienced clerk what kinds of packages are available and how the poultry is dressed.

Goggles made by the Polaroid Corporation

Chosen for its optical clarity

SUPERIOR GOGGLES are a big factor in the effectiveness of our tank crews and other ground forces. Each goggle frame is equipped with a set of lenses which are interchanged as conditions demand. For example, there are two lenses for protection against glare . . . one for use early or late in the day . . . the other for picking out an enemy hidden in the fierce glare of the midday sun.

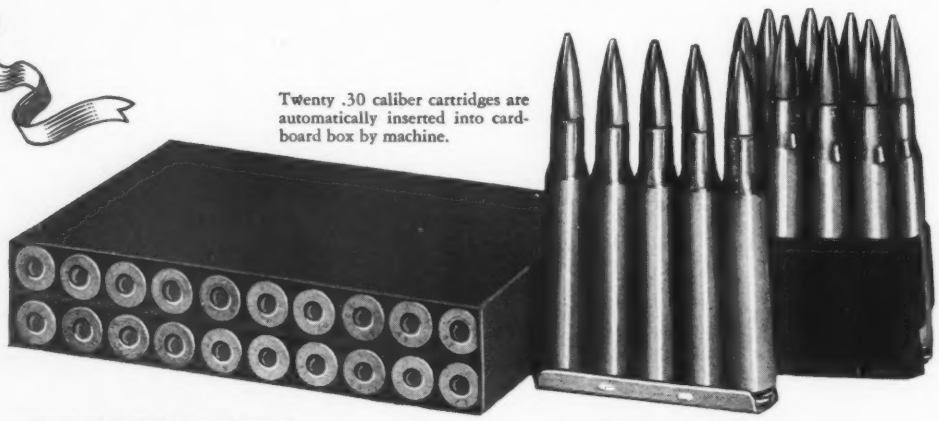
Each of these two lenses is essentially a package—a three-part laminated unit. The middle polarizing layer (the one that knocks out the glare for our tank crews) is protected by two layers which are made from a *packaging material.* A material that all of you knew . . . and many of you used . . . in peacetime . . . Eastman Acetate Sheet—selected because of its optical clarity and freedom from distortion, as well as for its exceptional rigidity and toughness.

As you know, Eastman Acetate Sheet is not now available for general civilian purposes; but, of course, it will be at your service again . . . for many packaging applications . . . when the war is won. Eastman Kodak Company, Chemical Sales Division, Rochester, N. Y.

EASTMAN ACETATE SHEET

ATTRACTS PROTECTS SELLS

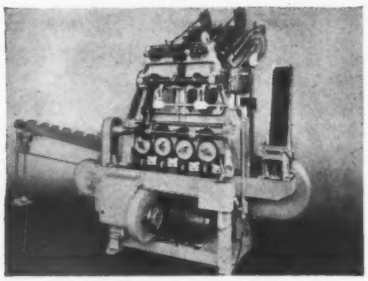
★ SPECIAL AWARD ★
in the
All-America Package Competition



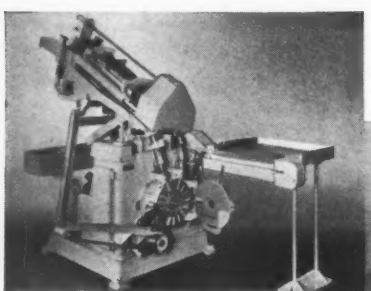
Twenty .30 caliber cartridges are automatically inserted into cardboard box by machine.

70 Garand clips per minute are loaded automatically by machine.

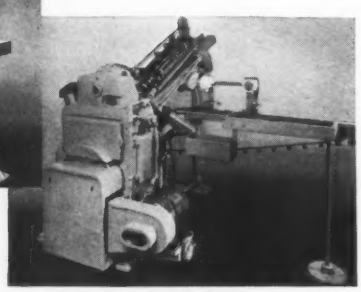
Springfield clips are loaded at a speed of 150 clips per minute.



Cartridge Box Loader



Springfield Clip Loader



Garand Clip Loader

Recognizing the important part which these machines play in speeding up armament production, the judges of the All-America Package Competition presented us with a Special Award for Creative Contribution to the War Effort.

The first Garand and Springfield clip loaders were designed and built in approximately three months' time. Quantity production followed, and batteries of these machines are now in service . . . Later we designed and built the machine for loading .30 caliber cartridges into boxes.

Many other machines built by us are being used in the armament program. And our standard wrapping machines are turning out tons of food, bandages, hard candy, ration bars, radio batteries, etc.

We are bending every effort to meet war and essential civilian needs. If you require a machine for such use, we will be glad to give you helpful information on obtaining priorities. Write our nearest office.

PACKAGE MACHINERY COMPANY
Springfield, Massachusetts

NEW YORK CHICAGO CLEVELAND
LOS ANGELES TORONTO

PACKAGE MACHINERY COMPANY

Over a Quarter Billion Packages per day are wrapped on our Machines

TECHNICAL SECTION

- MACHINERY
- PRODUCTION
- TESTING

Technical Editor
CHARLES A. SOUTHWICK, JR.

Among finest examples of modern methods of heat sealing are these single unit tablet strips made on a rotary sealer.

HEAT SEALING—1. *Agents, Their Application and Evaluation*

*by F. S. Leinbach**

Heat-sealing agents, for the purposes of this discussion, are thermoplastic materials which can be formed into films or can be coated upon papers or other films and are reasonably normal, non-sticky solids at ordinary temperatures, but which either melt or become very sticky at temperatures ranging from about 150 deg. F. to about 300 deg. F. If two pieces of such an agent are pressed against one another and if the area of their contact ("interface") is raised to the temperature at which the material either melts or gets very sticky, the two pieces will weld together (i.e., be "sealed" by heat). If the same agent is coated over the surface of, for instance, paper, in sufficient thickness, two layers of that coated paper, if pressed together and heated, will be "sealed" together by the fusing action of the heat-sealing agent comprising the coating. The advantages of such action in packaging work are both obvious and well known. It is the purpose of this paper to review the types of agents which can be formed into packaging material or coated upon packaging material and to review the methods and the factors involved in so doing.

Heat-sealing agents are of two types: (1) those which are coated upon some carrier film or sheet and (2) those which can be made into films by themselves. Of course, some materials can operate in both categories.

The heat-sealing agents which are coated upon carrier films or sheets, in turn, are of two types: (a) those which truly melt and (b) those which, on heating, become very sticky. This latter type generally are materials that decompose before they get hot enough to melt.

* Research and Development Branch, Office of the Quartermaster General, War Dept., Washington, D. C. This is the first of two articles on heat sealing by Mr. Leinbach. The second on "Techniques and Equipment" will appear in an early issue.

1

Paraffin wax is typical of the agents which are coated upon a film or sheet and which truly melt. Waxed paper, still the most widely used heat-sealing material, was the earliest product to bring the advantages of heat sealing to packaging. Paraffin wax is not particularly sticky at ordinary temperatures, but melts at somewhat elevated temperatures, ranging from about 130 deg. F. to about 140 deg. F., depending upon the grade of wax used. If two pieces of waxed paper are pressed together and are sufficiently heated through to their interface, the paraffin on their surfaces will melt and fuse. While molten, the wax is not sticky, hence will not hold the two sheets together, but if they are held in position until the fused wax in the interface chills, the wax will have sealed the two sheets together. It is characteristic of most true melting agents that their seals must be held in position while the sealing material solidifies.

The force required to separate the two pieces of sealed waxed paper, that is, the tightness of the seal, is easily seen to depend upon the cohesion of the wax with itself and the adhesion of the wax to the paper. It is common experience that neither the cohesion of paraffin nor its adhesion to paper is very great, therefore, the tightness of the seal, or, the seal strength of waxed papers, is not very great, although obviously adequate for many purposes. It should be noted that within limits, the seal strength of waxed paper increases with an increase of the thickness of the waxed coating. It should also be noted that until a certain thickness of wax is coated on the surface of paper, it does not become heat sealing. If, under the heat of the seal, too great a proportion of the wax is absorbed into the paper or among the irregularities of its surface, too little remains on the surface to effect a seal. Thus, it takes less wax on smooth surfaced, non-absorbent glassine to make it heat seal than it does on rougher, more absorbent sulphites. However, given enough wax on a sulphite, the rougher surface has the effect of better adhesion of wax to paper and the seal of the waxed sulphite will be stronger than that of waxed glassine, whatever the other attendant functional qualities of either paper.

This relationship between the absorbency of the base sheet and the minimum coating weight for effective seal is important and applies to any type of heat-sealing agent and to any type of base sheet.

In order to improve the seal strength of waxed papers, it is necessary to cause both the cohesion of the wax and its adhesion to its base sheet to be strengthened. This is done by adding materials like rubber, rubber derivatives or related compounds, or resins. Suitable materials of these types not only raise the melting point of the wax, but also make it become quite sticky when hot. In fact, blends of this type do not have a true melting *point*, but, as the temperature increases, they become sticky ("tacky") and softer until they finally do approach what might be termed a molten state, though never so fluid as molten wax. The relation between temperature increase and progressive softness is known as the "melting" or "softening" range of the blend. As indicated, such blends can be made to be quite tacky when hot and thus make quick and firm heat seals with a minimum of chilling required before the seal "sets." In some cases, at sealing temperatures, the material of the coating is so tacky that no chill is required, for the tackiness of the material, though hot, is sufficient to hold the seal together. Blends of this type usually have excellent adhesion to many things and papers or films coated with fairly heavy coatings have found widespread application, such as in bags for wet pack frozen foods, in cheese wrappers, and in "heat-seal" labels, where the tackiness of the hot material coated on the back of the label is useful in adhering the label to almost anything including glass, the sealed ends of waxed bread wrapper, individual frankfurters, etc. As may have been noted, such modification of wax

2

1. Seal strength of this bag for frozen foods has been increased by blending the wax with suitable materials. This is example of modified wax coated agent. 2. At right in photo is a foil covered carton which illustrates method of applying heat-sealing agents during formation of package. Paper wrapped carton on left has agent applied to areas to be heat sealed at time of wrapping.

tends to direct it into the second type of agents that are coated upon a carrier sheet or film, namely, those which on heating do not melt, but become very sticky.

Most widespread among these latter agents are nitrocellulose lacquers. Nitrocellulose, by itself, is anything but heat sealing, but it does form cohesive coatings. Adhesion between the nitrocellulose and the carrier film or sheet is obtained through the addition of resins, which have, as a class, excellent adhesion. This blend is then softened with a "plasticizer" to a point where the softening range is such that the coating is not sticky at ordinary temperatures, but becomes so tacky at elevated temperatures that fusion may be had. Here, as with the paraffin or modified paraffin, the seal strength remains a function both of the cohesion of the coating and its adhesion to the base material. It is difficult to find that rare blend of nitrocellulose, resin and plasticizer, which has the proper softening range; and the lacquer formulator is ever between the possibility of the coated material sealing to itself in rolls before use ("blocking"), or of not becoming sufficiently tacky at permissible temperatures to seal effectively. For these and other reasons, *all* heat-sealing packaging materials should be stored at moderate temperatures by the user, avoiding excessively warm storage, storage near heating pipes or radiators, etc.

The outstanding, widespread example of nitrocellulose heat-sealing coating is to be found in heat-sealing cellophane. As is commonly known, this product is made by applying a nicely blended nitrocellulosic heat-sealing coating to a film of regenerated cellulose. This coating, as is well known, has other functional advantages besides heat sealing.

There are a number of other agents which adapt themselves to heat-sealing coatings. Ethyl cellulose and its blends make coatings that heat seal excellently. Cyclicized rubber coatings have a quick, firm heat seal. Cellulose acetate can be formulated for heat sealing. The vinyl polymers produce coatings that heat seal at fairly low temperatures. Vinylidene chloride polymer, also the mixed cellulose ethers and polyvinylbutyral, all produce excellent seals, but their fullest use is not nearly developed as yet because of production limitations imposed by war conditions. These agents vary in their cohesion and in their adhesion to base materials, therefore, the strength of the seals they make will vary.

Many heat-sealing agents are cohesive and strong enough to be cast into films, and thus do not need to be coated upon some carrier sheet or film, although some may also be used as coatings. An example of heat-sealing film material is well known in rubber hydrochloride film, widely used before the necessary curtailment of rubber. Ethyl cellulose film, also was well known, though newer and with less widely extended uses. Cellulose acetate has been cast into films for packaging purposes for some time and has found extended use, particularly where greaseproofness is required.

As indicated above, the seal strength of a coated sheet is a function of the cohesion of the coating and its adhesion to the base sheet, for it is only through the fusion of the coating on adjacent surfaces that the seal is made.

In the case of the heat sealing films, however, when they seal, the two films in the sealed area fuse and the seal becomes a true weld. Thus the strength of the seal is that of the material itself.

Heat-sealing agents are directed to packaging use in four general methods: (1) as a self-supporting film, (2) as an overall coating on a carrier sheet or film, (3) applied as a spot or strip only to those areas of a sheet or film that are the areas to be heat sealed in forming or closing the package (as around the mouth of a bag) and (4) applied to the areas to be heat sealed, but applied just as the package is in the process of formation.

In the case of the self-supporting film, the strength of the properly made seal is the strength of the material itself. A package made from a heat-seal film and having completely heat-sealed closure is literally encased in a continuous unbroken film of that material. The advantages of such an arrangement in terms of moisture-vapor-proofness or the other functional qualities of the film are obvious.

In the case of the overall coating, the same situation may be closely approached, even approximated with ideal seals, although the full functional efficiency of packages made from coated sheets or films is more likely to be impaired by less than perfect seals.

In both cases, however, considerable advantage in package formation accrues from the fact that any two areas of the films or coated papers, when placed in contact and heated, will form a seal. No regard need be paid to having exactly the right spot in the right position. These methods of directing heat-sealing agents into packaging work are the most widespread and enable the formation of wraps, bags, packages and package adjuncts of varied description.

Heat-sealing agents directed to packaging use through applying a spot or strip only to those areas to be heat sealed are finding increasing use, particularly in bag manufacture. Many materials that have most useful qualities, such as the

3

3. Package for dry yeast is a pouch-type envelope and holds about 6½ grams. It is made from a laminated, opaque material which is heat-sealed along edges. Heat-sealing agent is applied as a strip to those areas to be sealed. This method is finding increasing use, particularly in bag manufacture, in which agent is imprinted around inside edge of bag top.

greaseproofness of parchment, and the moisture-vapor-proofness and greaseproofness of laminated glassine, do not happen to have the ability to heat seal. They can be augmented with a coating to lend heat-sealing characteristics, but if the coating does not have to contribute some other useful function, it is not economical to do so since the majority of the area covered by the coating never gets used in performing the heat-sealing function. In bag manufacture this problem is solved by applying an imprint of heat-sealing agent around the inside edge of the top of the bag, since this is the only area that needs to be in contact for heat-seal closure. In some applications of foils, a thermoplastic material (i.e., heat-sealing agent) is "spotted" in strips along only those areas of the web which will be in contact when the seal is made. Thus the very useful functional qualities of foil are given the added advantage of heat seal. The same method, of course, can be applied to many other materials. Use of such a method presupposes that the equipment handling the imprinted web is equipped to control its feed into the machine and to place the imprinted areas in exactly the right position with relation to the package.

The method of direct heat-sealing agents into packaging use by applying them to the areas to be sealed, but applying them as the package is in the process of formation, is peculiar to certain types of wrapping equipment which enables the advantages of heat sealing to be used on non-heat-sealing webs, just as in the previous method. In this case, however, the web is fed into the wrapping machine and as it is placed around the object to be wrapped, just before the areas to be sealed are brought into final contact, strips of heat-sealing agent (thermoplastic material) are placed on the proper areas, the closure is made and the seal insured by heating.

To inspect and to evaluate, even elementally, any heat-sealing packaging material, it is necessary to know the temperature required to effect the seal with that particular heat-sealing agent (which does not mean the temperature of sealers on machines that will handle the material, as will be discussed in a later article), the strength of the seal and whether or not the material is likely to block (stick together) during shipment prior to use.

The fusing temperature of any heat-sealing agent varies with the formulation of the material itself and must be determined for each agent and for any variation of it. A method for such determination has been to press two thicknesses of the material together between two heated metallic sealer surfaces with sufficient pressure to insure close and uniformly even contact, inspecting the tightness of the seal at progressively increased temperatures. For almost all materials an optimum temperature range will be found, below which or above which the seal is not so firm as it is if made at temperatures within the optimum range. There is no standard test, although there should be, and in a standardized test these factors, at least, must be considered:

1. The material of which the heated sealer surfaces are made.
2. The source and position of the heat supply and the means of insuring uniform heat distribution throughout the sealer surfaces.
3. The method of measuring and of controlling the temperature level and the position of the mechanism effecting this measurement and control.
4. The area and the nature of the sealer surfaces, whether flat or serrated, whether solid or resilient.
5. The force applied in making the seal and its source and means of application.
6. Time during which heated contact is maintained.

Of these factors it may be said that the material of the sealer surfaces should be non-reactive to materials such as resins having high acid numbers and should have good thermal conductivity. Copper suggests itself from both standpoints. The source of heat probably would best be electrical and should be of such shape and position as to insure even heat distribution across the sealer surface. The temperature might be measured by a surface pyrometer actually placed against the sealer surfaces, but maintained by close thermostatic control, in which case the thermostat bulb should be between the source of heat supply and the sealer surface. It may be possible to do this job through accurately calibrated thermostatic control alone. The sealing surfaces probably should be flat, since the same apparatus is essential to the ensuing test, and serrations might cause an uncontrollable variable in that test. The trouble with this, however, is that metal parts, however carefully manufactured, tend to warp even slightly under prolonged heating, and even slight variation of pressure alters the effectiveness of the seal. It is probable, therefore, that one of the sealer surfaces should be a heat resistant resilient material, possibly one of the vulcanized synthetic rubber compounds. This suggests one sealer surface or block made of metal and containing the heat source, the other made of a resilient material, without a heat source. The force applied to make the seal should be sufficient to insure close contact throughout the sealed area. The time of contact should be long enough to insure having the entire sample being sealed raised to the indicated temperatures, regardless of thickness or conductivity characteristics.

Given the optimum sealing temperature range and an apparatus capable of duplicable sealing conditions, the strength of the seal can be measured. Here, again, there is no accepted standard test, but there should be.

One method that has given satisfactory results has called for a seal, made by a fixed method to be made between two strips of paper of standard width and length. The seal is so made that it joins the strips through only a part (possibly one-half to two-thirds) of their length, the seal being made at a temperature within the optimum sealing range. Then the free end of one of the strips is fastened in a stationary clamp. The free end of the other is bent back over the sealed area, and, by means of a clamp, is fastened to a wire leading to a source of constant rate of motion, such as a pulley geared to be slowly driven at constant speed by a motor. Thus, when the pulley starts turning and winding the wire upon itself, the seal begins to separate. In the line, between the clamped free end of the sealed sample and the pulley, is connected a means of measuring the (*Continued on page 108*)

4. ***Loaf of bread is wrapped in waxed paper, most widely used heat-sealing material, and heat sealed at ends.***

FIBRE CANS ON TIN LINES

All-fibre can closely resembles tin container. Fibre can has two closures—a shipping disc and plug-type replaceable cap.

A coffee can now used by Putnam, Sweden House, New & True, among other brands, is made of all-fibre. It is manufactured and filled on existing equipment with only minor machinery adjustments. How to make cans without metal on metal can making machinery has been a teaser for can engineers and researchers ever since the WPB restrictions took everything out of cans for civilian use that does not bear the official stamp "essential." The result has been development of a number of substitute packages that have not only solved some tough problems for packers of various products, but which are interesting for their possible effect on certain phases of post-war packaging.

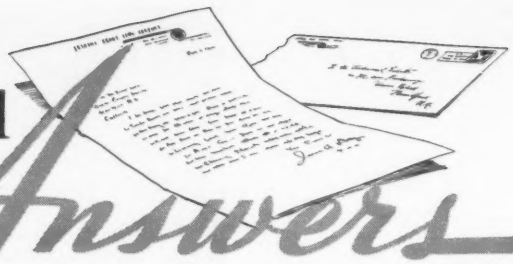
The victory package these coffee packers and a number of others are using is practically the same size as the vacuum-packed metal container. It is protectively lined and is equipped with two closures—a shipping disc, which is removed by the consumer, and a friction plug or replaceable cap to close the can when not in use. Weighing when filled only one pound, $2^1/_4$ ounces, the can is compact, tough and light. It seals tightly, preventing dust accumulation, permits the use of the regular labeling design, doesn't spill and stacks well on the shelf in the store or in the kitchen. While the fibre can's chief advantage to roasters is, of course, its adaptability to existing filling equipment, it has many of the characteristics, except that of vacuum packing, of the metal container. The shipping disc which appears on the top of the container, affords added protection for the can of coffee while the product is being shipped, when it is in storage or is on the grocer's shelves. Instructions printed on it tell the consumer how to remove it. The friction plug or replaceable cap can be used by the consumer in just the same way she used the lid of a metal container. When replaced, the paper plug protects the coffee until it has been used up. The opening in the top of the fibre can is sufficiently large to allow for the insertion of a tablespoon and easy measuring out of the coffee.

These all-fibre cans, for the most part, are constructed of stock similar to the modern paper milk container with a thermoplastic lacquer lining which serves the double purpose of a protective inner coating and adhesive for the seam and joints. This all-fibre lap-seam construction is considered one of the newest wrinkles in can manufacture.

Not only have these fibre cans been found suitable for coffee, but tests have been made and they have also been found satisfactory for a number of dry food products such as cereals, grated cheese, dehydrated foods, starch type dessert powders, cocoa, spices and others as well as numerous dry chemicals. The can which has been found most suitable for these dry food products and dry chemicals is of lap-seam construction with top and ends crimped and heat-sealed to the wall. A friction plug with inner expanding disc provides a tight, easily removed and easily replaced closure. The can has resistance to grease and a limited resistance to water vapor. Besides the new lap-seam, fibre can, the familiar spiral and convolute types are also being made.

The spiral can is made by feeding two or more narrow plies of paper stock to which an adhesive (*Continued on page 110*)

QUESTIONS and Answers



Bags for beverage powder

QUESTION: A laminated glassine bag has been giving good results for the packaging of a beverage powder in 6-oz. size. However, the same product cakes in an 1-oz. envelope of the same laminated glassine.

ANSWER: First, it must be assumed that the glassine of the two sizes of packages has the same moisture-vapor transmission rate. This rate is probably about 0.3 gram per 100 sq. in. per 24 hours. It is also necessary to assume that both packages are equally well made and closed. The following tabulation shows the surface as compared to the weight of product for each package:

Contents	Package Dimension	Surface Area	Surface area per 1 oz. of product
1 oz.	2″ x 3″	12 sq. in.	$\frac{12}{1}$ or 12 sq. in.
6 oz.	3″ x 4″ x 1″	38 sq. in.	$\frac{38}{6}$ or $6\frac{1}{3}$ sq. in.

Since package moisture gain is proportional to the net surface area of the moisture resistant barrier, the 1-oz. envelope has nearly twice the rate of moisture gain of the 6-oz. package (twice as much area per ounce of product).

Therefore, the 1-oz. package should be made from a material which is at least twice as moisture-vapor resistant as now used for the 6-oz. size. This would be a value of $\frac{0.3}{2}$ or 0.15 gram per 100 sq. in. per 24 hours. However, the 1-oz. envelope holds the product in a thin layer and so it would be better to use a moisture-vapor transmission rate of about 0.1 gram for the new 1-oz. envelope material. This value can be obtained in several heat-sealing laminated structures.

Scuffing and peeling of coatings

QUESTION: What is the cause of scuffing and peeling of moistureproof lacquer coatings on some colors of lithographed paper labels?

ANSWER: This peeling is due to poor adhesion either of the lacquer to the ink or of the ink to the surface below it. Such poor adhesion usually occurs on certain colors or on areas where more than one color has been laid down. The cure is to find the proper ink formulation especially in regard to the type and amount of drier. Any ink manufacturer can supply samples of various compositions for experimentation to obtain the best formulation for the press operation for the color sequence and for the best adhesion of the lacquer. It is also important to apply the lacquer at a fixed time after the completion of lithographing. The proper length of time can be found very quickly by trial and error using sample sheets.

Address your questions to Charles A. Southwick, Jr., Technical Editor, Modern Packaging, 122 E. 42nd St., New York City.

Why cellophane may split in winter

QUESTION: A finely ground dry powder is packaged in single ply moistureproof cellophane heat-sealed envelopes. Why do we receive many complaints of shattered and split packages especially in the winter?

ANSWER: The cause of this breakage is the drying out of the cellophane which results in brittleness. This drying out is more severe in the winter because of the generally low humidity of the air.

However, the product also can absorb moisture from the cellophane and so contribute to this failure. The answer to this problem is to use cellophane with more plasticizer (especially for winter use) and to check with your supplier to be sure that the most suitable grade of cellophane is being used for your envelopes. It may be necessary to use a duplex or laminated envelope if the product is extremely hygroscopic.

Parchment bag to stand boiling

QUESTION: How can a parchment bag be made so that it will stand a short immersion in boiling water?

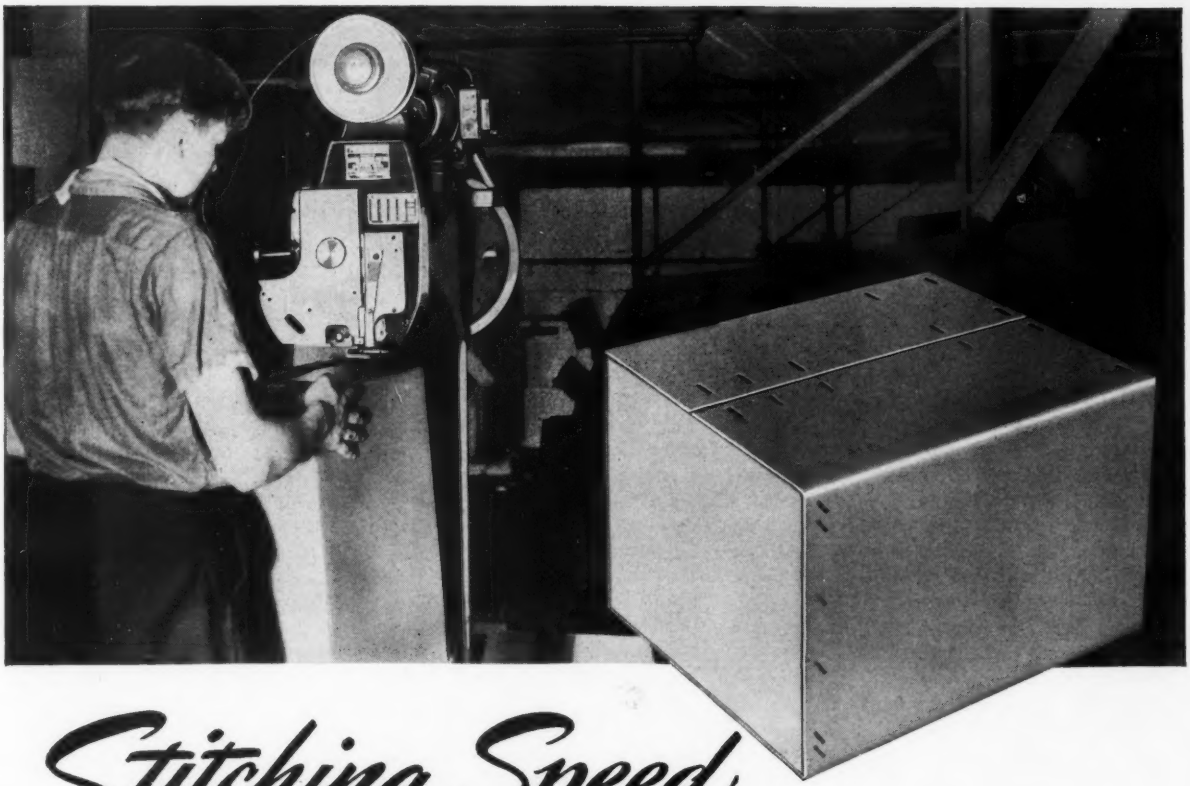
ANSWER: Since parchment paper is not affected by this treatment in boiling water, the problem is to secure the proper adhesives for the bag seams and bottom. The adhesive must not be softened or melted by the heat or disintegrated by the water.

Experience has shown that certain synthetic resins in solvent solutions give the best results for these conditions. Specifically some of the vinyl polymers will stand such treatment and are also odorless and tasteless.

Standard test methods

QUESTION: Have standard test methods been developed for packaging materials? If so, what are they?

ANSWER: Yes, a number of standard test methods have been developed. For example, there are standard methods set up by TAPPI for the testing of paper. There are, however, a wide variety of special testing methods and a great many different methods used by suppliers and by testing laboratories. This has made for a disorganized state in the field of testing since no yardsticks or guide posts have been set up whereby overall methods of testing packaging materials can be followed. To date there has not been enough standardization. What is needed in the packaging field is a getting together of a group that will work on the setting up of reproducible test methods for packaging field as a whole. It is up to some organization to bring order into what is now a fairly chaotic state.



Stitching Speed is worth Protecting!

Don't overlook this fact: wire stitching as a METHOD is not restricted by wartime regulations. Only METALS required to make new wire stitching machines are restricted.

If you are one of the multitude of owners of Morrison Wire Stitching Machines, caution your operators and maintenance men to keep those irreplaceable machines properly lubricated and adjusted at all times!

Stitching speed is worth protecting! You can't duplicate it with any other method that offers equal advantages of package strength, moisture-proof seals, and low unit cost of assembling and sealing corrugated and solid fibre containers.

SEYBOLD DIVISION

Harris-Seybold-Potter Company • 819 Washington Street, Dayton, Ohio

SEYBOLD SALES AND SERVICE

New York:
E. P. LAWSON CO., INC.
426 West 33rd Street

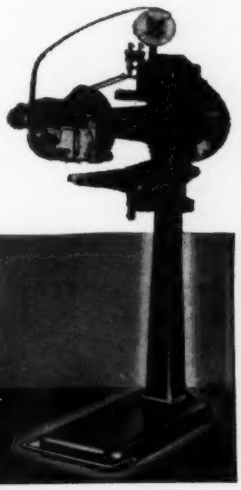
Chicago:
CHAS. N. STEVENS CO., INC.
112 West Harrison Street

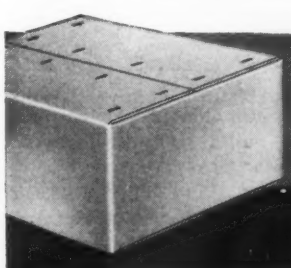
Detroit, Michigan:
CHAS. A. STRELINGER CO.
149 East Larned Street

Southern Sales District:
HARRIS-SEYBOLD-POTTER CO.
220 Lockie St., N.W., Atlanta, Ga.

West Coast Distributor:
HARRY W. BRINTNALL COMPANY
San Francisco, Los Angeles, Seattle

Canadian Distributor:
HARRIS-SEYBOLD-POTTER (CANADA) LTD.
Toronto and Montreal





MORRISON

WIRE STITCHING MACHINES

LAY-AWAY ORDERS for MACHINERY

Should packaging machinery manufacturers accept orders now for post-war delivery? Should they merely put them on their books as a priority guide or should they insist on down payments, firm contracts and fixed prices?

These questions are of prime interest today in the packaging machinery field, as canny buyers, scenting the end of the war, prepare to take their post-war plans from the paper stage into the realm of reality.

A canvass of important machinery manufacturers reveals a growing disposition on the part of such executives to put into effect some sort of a layaway plan, the chief effect of which is to give the buyer a preference in delivery after the war. In general these plans are not very binding and appear to allow both manufacturer and buyer an escape, in the event of untoward circumstances developing. However, before examining these plan and the pros and cons of layaway schemes, a consideration of the very comprehensive program instituted in an entirely different field by the RCA Victor Division of the Radio Corp. of America is valuable.

RCA Victor manufactures theatre and sound equipment, the production of which has been halted by the war, just as has been the output of packaging machinery. The company reasons—just as do the packaging machinery manuacturers—that when the war ends hundreds and even thousands of theatre exhibitors will need new equipment badly. This big initial post-war demand may exceed the available supply for as long as two years, which means a mad scramble for equipment, a flood of orders and undoubtedly a lot of grumbling and complaining from those theatre owners whose demands are not satisfied immediately.

RCA plan

So RCA has developed a comprehensive scheme known as the "Purchase Priority Plan," which offers to exhibitors the opportunity to apply now for post-war deliveries of sound and other theatre equipment. The plan provides a preferred position on the priority list for a theatre owner and a method of building up an interest-bearing cash reserve for the exhibitor to apply against his post-war purchase.

Here's how it works. An exhibitor determines the approximate cost of the equipment he will need and applies to RCA for a purchase priority agreement. His temporary place on the priority list will be determined by the time and date on the postmark of the envelope bearing the application. He must return the signed agreement with a down payment check, agreeing in the contract to make weekly or monthly deposits until a total of at least 20 per cent of the estimated purchase price is on deposit with the company. RCA will pay interest on these deposits. The exhibitor may also elect to secure the agreement with a single cash payment in which case only 10 per cent of the estimated purchase price will be required.

If the signed agreement is mailed to RCA within 30 days after receipt of the original application, the theatre's temporary position on the delivery priority list becomes permanent. Otherwise, the position will be determined by the new postmark date upon which the signed agreement is received. When RCA resumes normal manufacture, the theatre operator can convert his agreement into a standard form of order or contract at prices and terms then in effect and apply his deposit and interest as a down payment.

This is how one plan works. Can it be applied to packaging and bottling machinery? The industry doesn't think so yet. Manufacturers are willing to accept orders all right and put them on file, but they do not want to start taking money now. Here's what Charles L. Barr, vice-president of F. B. Redington Co., of Chicago says about it: "We are already accepting orders for Redington packaging machines from certain of our customers with the following understanding:

"1. That we will start work on these machines in the order in which they are received by us as soon as government wartime restrictions permit.

"2. Prior to our starting on any job, we will advise the customer what the price will be. If this price is, in the opinion of our customer, too far out of line with present prices when giving consideration to the then existing cost factors, the customer has the right to cancel the order.

"3. We are not accepting any down payment from any of our customers placing this type of order with us. Our reason for this being that we cannot foretell with sufficient accuracy what our costs will be at the time we are permitted to proceed with the manufacture of the equipment involved. We feel that there is ample time for us to accept advance payment when the customer and we have agreed on a price.

"We might change our ideas regarding this if we find our schedule is being loaded up with orders that are placed speculatively. If this develops we are inclined to feel that we will want to insist upon some such down payment as the RCA corporation is working out."

Mr. Barr makes a good point about speculative buying. It is in the minds of other executives. In other words, some buyers might think it smart to place duplicate orders with a half-dozen manufacturers and then when the showdown came, pick the one that gave the earliest delivery and best price and leave the others hanging fire.

Some disadvantages

One manufacturer points out that his equipment is practically custom built and quite expensive and that arranging a production schedule on the most economical basis possible is a vital factor at the plant. He added that he has large and small customers and "we believe there would be a chance for a great deal of argument on the part of the customers as to where they should be placed on the preference list because of the size of the order they might give us."

That is well taken. It would be natural for a manufacturer of foods, for example, purchasing a half-dozen automatic double unit fillers to think his order should take precedence over that calling for, say, a single tight-wrapping unit, even though the latter was ordered first.

H. H. Leonard, president of Consolidated Packaging Machinery Corp., thinks there are some definite advantages to the plan but also some liabilities. The plan would give the seller some idea of the volume (*Continued on page 106*)

TO BUILD A TANK — TO FIGHT A HUNDRED BATTLES

TANKS are tough. To build 'em or to fight 'em, a man has to be tough as Tarzan. And a man doesn't keep his back as strong as a steel spring, his eye and hand as swift as light, without plenty of the right kind of chow.

That's where Pneumatic Packaging & Bottling Machines come in. Nourishing foods packaged by Pneumatic are today playing a tremendous part in keeping millions of workers and fighters in there swinging with all their power—in both hemispheres. Wherever victory-vital foods are packaged — medicines, too — Pneumatic equipment is pouring forth an endless river of such supplies with unmatched speed and precision. Just such qualities as these make invaluable the ordnance equipment Pneumatic is engaged in turning out today in record time.

Sound design, precision engineering, and more accurate machining enable Pneumatic machines to perform everywhere like thoroughbreds. If it's a Pneumatic, rest assured it's withstanding the pressure of any overload put on it during the present emergency.

PNEUMATIC SCALE CORPORATION, LTD., 71 Newport Avenue, North Quincy, Massachusetts, New York, Chicago . San Francisco . Los Angeles .

PNEUMATIC
PACKAGING & BOTTLING MACHINERY

If it's a packaging problem, consult Pneumatic first. Semi-automatic and fully-automatic machinery.

CARTON FEEDERS
BOTTOM SEALERS
LINERS
WEIGHERS
TOP SEALERS
TIGHT WRAPPERS
also
SPECIAL COMBINATION PACKAGING UNITS

WASHINGTON REVIEW

by R. L. Van Boskirk

● **Further Glass Standardization**—The news that many food processors had been waiting for broke on April 5 when WPB issued an amendment to Limitation Order L-103 standardizing glass containers for 21 additional food products. Approximately 90 standard glass containers are provided. Most small sizes are eliminated. WPB estimates that 30 per cent of the steel, tin, liner and lacquer formerly used will be saved. It is estimated that about 860,000,000 glass containers—20 per cent more than were made in 1941—can be made on existing equipment.

Beginning August 6, 1943, glass manufacturers may make only glass jars, pails, bottles, tumblers and jugs of specified standards for packaging the 21 additional food products. Notwithstanding provisions of the order which permit the interchange of finishes on certain glass containers, food packers may not use, for the packing of any specified products, any glass containers with a "deep screw cap" finish, except as specifically permitted.

In addition, manufacturers may make molds for containers for these products only in conformity with standard specifications. Molds for non-standard containers may not be replaced, whether because of wear or for any other reason.

The amendment also indirectly standardized the size of closure for standard glass containers.

It should be noted that the order restricts only the size of the package by establishing a minimum and any standard container of minimum size or larger can be used. Thus, preserves are limited to a 12-oz. size—any standard larger size can be used.

The order is an attempt to accomplish the purpose of packing many more jars with existing plant facilities and the saving of 20,000 tons of steel by regulation of the jar openings instead of the jar itself and with as little regimentation as possible.

In providing containers an attempt was made to provide sizes of standard containers which would permit packing of products in glass instead of tin without disturbing OPA regulations. For example, many syrup packers provided $1^1/_2$-lb. cans as their general grocery store item. It was discovered that no jar in the original draft would permit the same size packaging glass so the $18^5/_{16}$-oz. economy jar was provided for this purpose.

Temporary restrictions on the amount of empty new glass containers which may be acquired by chemical manufacturers, carbonated beverage bottlers, brewers, distillers or any other commercial user of glass containers were imposed by Supp. Order L-103-a issued April 13. The order expires Sept. 30, 1943. It prohibits acquisitions which will increase inventories to more than a 60-day supply of any particular item. The purpose is to make more glass available for home canners.

Manufacture of the one-trip beer bottle was prohibited after April 15 under L-103 as amended April 5.

● **New Ceiling for Paperboard**—A new base price of $63 a ton was set for Fourdrinier kraft paperboard April 1 by OPA in an amendment to Revised Price Schedule No. 32 (Paperboard Sold East of the Rocky Mountains). Simultaneously, OPA announced that to prevent this increase from being passed on to the consumer, MPR 187 (Certain Paperboard Products) would be amended to require those covered by that regulation to figure their raw material costs at no higher than the ceiling prices in effect March 31, 1943. This amendment is supposed to be temporary and might be continued or discontinued after a meeting with the industries involved. While the temporary freeze on raw material cost factors is in effect, OPA will make a cost survey and consult with industry. Before June 1, they will decide future action. The listed ceilings for liquid-tight cylindrical containers are for sales to distributors and it is specified that either manufacturers or distributors may add specified percentages to the maximums on sales to consumers.

● **Changes in Rubber-Sealed Closures**—Conservation Order M-119 which prohibited use of rubber closures in such products as coffee, tobacco and animal food was revoked March 30 and its provisions incorporated in Conservation Order M-104. The new order specifies the limits within which closures for glass containers can be used for packaging foods, health supplies, chemicals, household and industrial products and beverages for civilians.

● **Paper Notes**—New ceilings for distributors of several hundred coarse paper products were established by a new regulation, MPR 349 (Distributors Maximum Prices for Certain Coarse Paper Products) effective May 21. The new regulation gives the distributors a new table of markups by which they may determine their ceilings. About 2,100 paper merchants are affected. Ceilings of manufacturers and retailers are not affected. Among the products covered are folding and set-up boxes, drinking cups, egg cartons, shirtboards, bags, pails, paperboard products.

A recent news release stated that the Wood Pulp Allocation Industry Advisory Committee had focused on the shortage of certain grades of wood pulp and advised on the necessity of using more groundwood. Inventories of most grades of pulp are down to a 30-day average basis. Unless there is either decreased consumption or increased production of bleached sulphite, bleached and unbleached sulphate, strong unbleached sulphite and soda pulp, it will be necessary to substitute groundwood and newsgrade unbleached sulphite to compensate for the shortage.

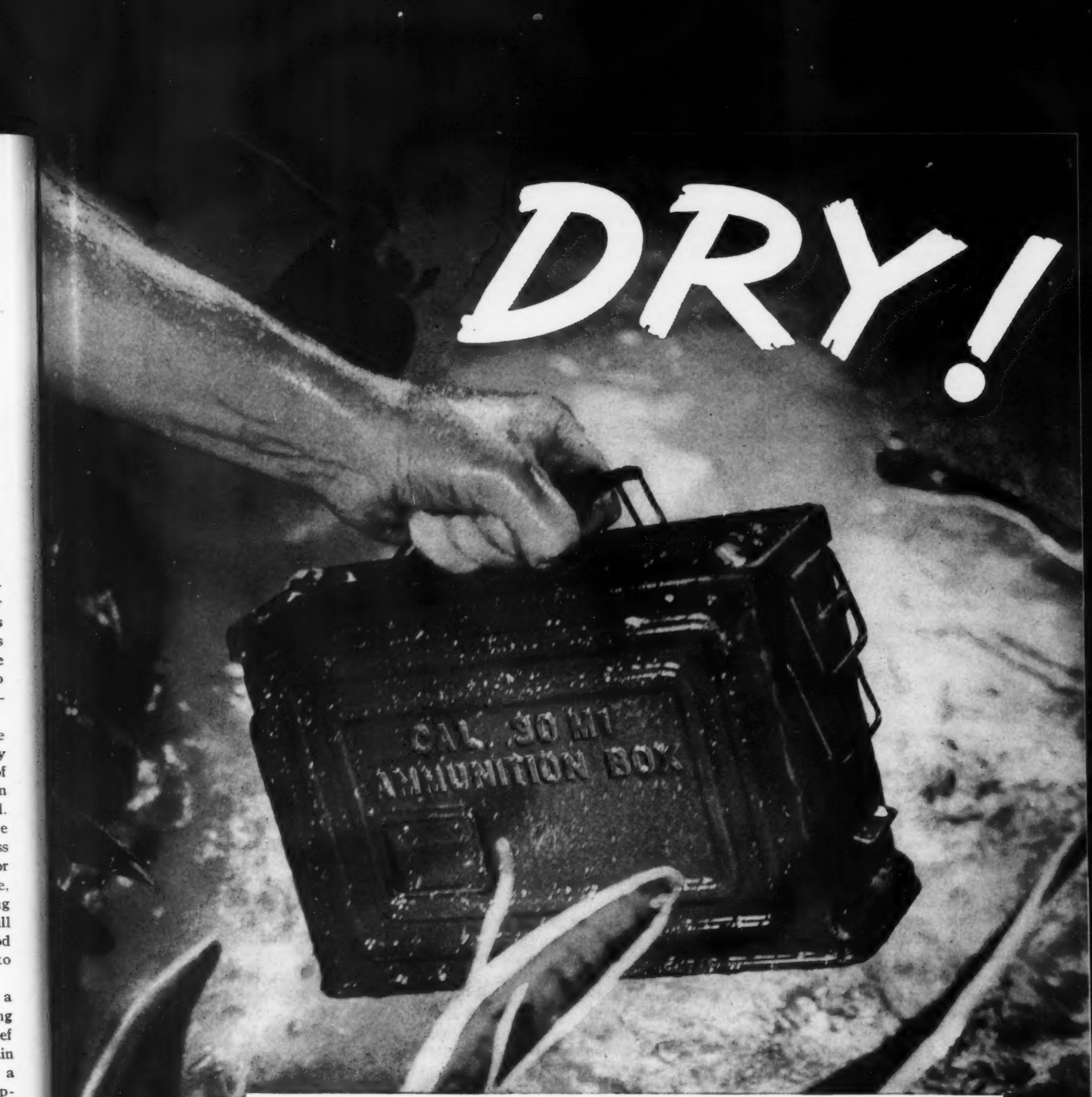
Pacific Coast states were placed in a separate zone in a regulation governing kraft wrapping papers and bags. Chief result of the change will be that at certain inland points the buyer will absorb a larger proportion of the freight on shipments, the seller benefiting proportionately.

● **New Manual for Damaged Shipments**—A "Manual for Inspection of Damaged Shipments" has been issued by the Container Coordinating Committee to be used by receivers and field representatives of the war procurement agencies. The book is full of illustrations showing typical failures of the more common types of containers. If you want to see what the inspectors look for you can get a copy of the booklet by writing to the Committee.

Two more new manuals are in process and will soon be issued. One will be an instruction book on packaging health and medical stores, the other for packaging subsistence goods.

● **Lumber for Boxes**—An order permitting sellers of rotary cut southern hardwood box lumber to enter long-term contracts at maximum prices in effect at the time of delivery was published as amendment 4 to MPR 176 on April 8.

DRY!



"Keep your powder dry" was the first advice given young riflemen of the flint-and-steel era. Keeping ammunition dry is still all-important in these days of machine guns.

Here's the ammunition box that keeps out water even when submerged in a jungle stream or spilled into the surf from a landing barge! It's Caliber .30 Ammunition Box M-1 . . . and thousands of them are being turned out by Crown Can for our armed forces.

Specifications call for a container that is airtight and watertight under all climatic conditions . . . stout enough to stand the roughest handling . . . easily opened without tools . . . and capable of being resealed to remain waterproof.

Crown Can is turning them out to those specifications . . . and shipping them out in quantities we can't quote. But Hitler wouldn't like the figures!

CROWN CAN COMPANY
Philadelphia & New York. *Division of Crown Cork & Seal Co.*, Baltimore

★ ★ ★

CROWN CAN

Shortages of lumber in other species increased demand for jack pine lumber used as a substitute by box manufacturers. Prices went up so OPA attempted to adjust the situation by reducing prices in Minnesota, Wisconsin and Michigan.

● **Housewife Gets Canning Aids**—Production of can openers, previously held to 35 per cent of the base period—year ending June 30, 1941—has been upped to 50 per cent of base period. Roswell Mowrer has asked housewives to get acquainted with the new steel-saving-glass-top closure, said to be popular in Canada. Approximately 634,000,000 are to be produced this year. The unit consists of three parts—glass lid, rubber jar ring, steel screw band. He advises that the screw band may be used over and over again, but cautions against moving filled container after it has been put away. Arrangements have been made for production of 150,000 pressure cookers, double the output of last year. More than 3,000,000,000 new closures will be available for home canning this year. Four principal types will be on the market. Only one type is prohibited—glass-lined zinc lid for mason jars.

● **Price Ceiling for Tin Cans**—OPA fixed prices on tin cans by issuance of MPR 350 effective in U. S. March 31 and in Alaska and Hawaii May 15. Maximum prices were formerly determined under GMPR. The new prices hold the same level that has been generally charged since before the war. Price relationships among sizes are those that existed in the past. Pricing of the large volume of substitute cans made of electrolytic tinplate is based on the lower cost of the electrolytic plate and the additional charges for the enamel this plate requires.

● **Obtaining Container Materials**—The Department of Agriculture urged packers and shippers of fruits and vegetables to file application immediately for their second quarter supplies of nails and wire for the assembly of containers or take the chance of not obtaining them. Firms that have not already applied under the new CMP of WPB should file their CMP-4B forms at once. Packers who have been obtaining supplies under PRP and have not filed CMP applications, may continue to obtain nails and wire under PRP by using the ration pattern assigned for the first quarter. Those who did not obtain supplies under PRP during the first quarter must file an application form CMP-4B immediately to secure allotment numbers and quota in order to get nails and wire.

● **Containers on the "Must" List**—Restrictions on the use of packaging materials, particularly cardboard paper containers, will not be permitted to limit the packing of essential foodstuffs, according to Donald Nelson. A food processor who cannot obtain the cardboard, paper or wood containers needed in packing essential foodstuffs should write or wire the Containers Division, WPB, Washington.

Closely related to these instructions was Food Distribution Order No. 30, which locked up the entire production of seven dehydrated vegetables for the armed forces and gave the Food Administrator power to issue directions and specifications on the processing, packaging, labeling and casing of these products.

● **Steel Drums**—Under M-45 amended April 8, steel drum manufacturers are required to set aside a specified inventory of hot or cold rolled sheet steel to make steel drums under specific order of WPB. Users are directed to apply for authorization to purchase new steel drums or parts on Form PD-835 instead of by letter, under the terms of Conservation Order M-255, March 29.

● **New Job**—Frederic C. Barber has been assigned to the new post of Assistant Chief of the Container Division in the Office of Procurement and Materiel at the Navy Department. He was formerly consultant to the Pulp and Paper Unit of the Office of Civilian Supply, WPB. He will study new places where paper or paperboard products can be applied to assist the war effort. Mr. Barber said his unit will welcome ideas and suggestions from the paper industry for new Naval uses of its products.

● **Wooden Container Sellers Under License**—All sellers of wooden containers and all persons performing services relating to their manufacture were automatically brought under license by Supplementary Order 39, March 20. Registration may be ordered at some future time, but no registration is contemplated soon.

● **Grade Labeling Again**—The 20-year-old battle over grade labeling is still on. It behooves packaging men to watch it closely. Background material may be found in the National Canners statement to the House Agriculture Committee on mandatory grade labeling. It presents the canners' arguments to show that grade labeling would add to rather than detract from OPA administrator Brown's troubles in policing price control. The question is a long way from being settled.

● **New Restrictions on Paper Boxes**—New restrictions on the manufacture of paper boxes for packaging frozen foods and work shirts are imposed by Order L-239, as amended April 15 by WPB. Paperboard used in folding and set-up boxes for packaging frozen foods must comply with specifications outlined in a technical table in the text of the order. No box for packaging work shirts may be of any size less than for six shirts. Such box may not be of any type other than that commonly known as a folder and made from paperboard of a quality not better than bleached manila lined news.

● **Egg Cartons**—A new requirement ordered by a March 20 amendment to MPR 268 requires that when eggs are sold in cartons, the grade and weight class or size must be stamped on the carton.

● **Spreading Out**—Indication of the further spread of price ceiling regulations is indicated by the March 27 amendment to MPR 319 which requires that retail ceiling prices must be printed on the wrappers or packaging materials of pastries, doughnuts, pies, cakes and sweet yeast raised goods.

● **Bag Orders**—Restrictions of Conservation Order M-221, which permitted the use of only standard sizes of textile bags and shipping sacks for storage or shipment of certain commodities, were removed on some commodities such as fertilizers, chemicals, etc., under an amendment dated March 30. The effective date of revised list was postponed from April 1 to May 1 to permit use of inventories for non-standard sizes.

Among other changes in the order was restriction of manufacturers of paper shipping sacks and textile bags instead of the users of such bags. Beginning May 1, paper shipping sack and textile bag manufacturers may produce bags designed for storage or shipment of the specified commodities only in specified sizes. The change was to facilitate control.

● **Paint Containers**—The Protective Coatings and Materials Section of the WPB Chemicals Division has called attention to recent amendments to Conservation Order M-81, concerning packing in one-gallon fibre containers with blackplate ends, the amount of plate which can be used, use of waste or reject plate in allowable quota.

● **Tin Supply**—To bring back into use for war purposes approximately 1,500 tons of tin now idle because it is locked up in surplus stocks of type metal and babbitt, the Metals Reserve Co. has signed a contract with the National Lead Co. to purchase and treat the metal. Surplus stocks have accumulated as a result of contraction of the printing industry.

Erwin Vogelsang, Director of the Tin-Lead Division, WPB, in releasing a report of the initial meeting of a newly formed Tin Products Industry Advisory Committee, declared that black market operations in tin must and will be stopped. Among present illegal uses he listed use of tin in body solder for repairing bodies and fenders of automobiles.

Can manufacturers in Washington, Oregon, California and Utah have been granted relief from inventory restrictions on tinplate imposed by CMP regulation No. 2 and are now permitted to carry a 90-day inventory of tinplate for making cans during the picking season until Sept. 30. After that date the 60-day limitation will again apply.

SEND EMPTIES BACK—

Please!

WE NEED THEM TO SHIP CEL-O-SEAL BANDS TO YOU

It may soon become impossible to supply CEL-O-SEAL cellulose bands UNLESS you return empty steel containers in which these bands are shipped.

As everyone knows . . . steel has gone to war. We cannot get more new containers. The old ones must do for the duration. We need them to continue making shipments. So help us and yourself. Look around your plant . . . round up the empties and send them back NOW.

We'll pay you to return them. We'll give the ceiling price established by the OPA for all CEL-O-SEAL steel containers returned intact with lids. We'll also pay transportation costs from your shipping point to our plant in Buffalo, N. Y. When returning containers be sure to crimp down two or three of the lugs on covers to hold them on. Please co-operate by returning empties promptly. E. I. du Pont de Nemours & Co. (Inc.), Cel-O-Seal Section, Buffalo, N. Y.

DU PONT
REG. U. S. PAT. OFF.

CEL-O-SEAL BANDS
TRADE MARK

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

U. S. Patent Digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at 10 cents each.

TEA BAG AND METHOD OF MAKING THE SAME. J. Y. Quincy (to Pneumatic Scale Corp., Ltd., Quincy, Mass.). U. S. 2,313,696, Mar. 9. A tea, coffee or similar bag comprising a container formed of a blank of bag-forming material of porous structure and enclosing a quantity of the commodity.

CONTAINER. H. E. Rue (to Pabst Brewing Co., Chicago, Ill.). U. S. 2,315,014, Mar. 30. A container comprising an adhesively coated fibrous strip having a plurality of windings upon itself forming a tubular base with a strip section extending therefrom for final winding upon the base; a metallic ribbon equal in length to the base circumference tightly wound upon the last layer of the tubular base, prongs projecting outwardly from the ribbon, said strip being securely bound and anchored for the reception of a container closure to resist high pressure strain developed in said container.

QUICK OPENING PACKAGE. J. S. Flizikowski (to J. E. Daniels, Chicago, Ill.). U. S. 2,315,116, Mar. 30. A tearable package wall having adhered flatwise to its inner side at an unslotted region thereof a self-tearing tear tape composed of parallel longitudinal strands so held together that the tape readily splits longitudinally but not transversely.

PLYWOOD BARREL. C. B. Arnold (to the Greif Bros. Cooperage Corp., Cleveland, Ohio). U. S. 2,313,309, Mar. 9. The combination of a cylindrical plywood drum, a sheet metal collar fitted exteriorly around the drum adjacent one end thereof with hoop fitted around and in engagement with both drum and collar.

COMBINATION SHIPPING AND DISPLAY CONTAINER FOR TOYS, ETC. M. Ulman (to Auburn Rubber Corp., Auburn, Ind.). U. S. 2,313,376, Mar. 9. A paperboard open top box structure adapted for telescopic inclusion with a sleeve-like shell for closure purposes.

PACKING FOR EGGS AND OTHER BRITTLE ARTICLES. K. Heshe, Aarhus, Denmark (vested in Alien Proper Custodian). U. S. 2,313,487, Mar. 9. A collapsible packing for eggs and other brittle articles including a wrapper, and an inset formed from a piece of cardboard or similar suitable material folded longitudinally of the packing to form an even number of longitudinally connected walls among themselves.

PACKAGE, PACKAGING CONTAINER AND BLANK THEREFOR. E. M. Brogden (to Manhattan Co., New York, N. Y.). U. S. 2,313,731, Mar. 16. A merchandise display and carrying container for consumer packages, being provided with handle.

SHIPPING AND DISPLAY CARTON. E. C. Berg (to Ace Carton Corp., Cicero, Ill.). U. S. 2,313,718, Mar. 16. A shipping and display carton formed of sheet material comprising a plurality of spaced compartments having continuous bottom and side walls and individual top and end walls, each equipped with flap sections lying along said side walls.

DISPLAY BOX. C. B. Holm (to International Braid Co., a corp. of Mass.). U. S. 2,313,747, Mar. 16. A rectangular display box with bottom wall and upstanding side and end walls with one pair of upstanding opposite walls being slit at opposite points intermediate their ends, and said bottom wall being foldable along a lateral line to dispose the other pair of walls in adjacency for supporting the box upright on the said other pair of walls.

CONTAINER FOR PHONOGRAPH NEEDLES AND THE LIKE. C. Pfanstiehl (to Pfanstiehl Chemical Co., a Corp. of Ill.). U. S. 2,313,766, Mar. 16. A package for elongated small objects comprising a relatively large thin transparent non-frangible bottom portion, a relatively small central cavity therein of substantially the size of the elongated object to be contained therein with a transparent thin non-frangible thermoplastic cover.

CONTAINER. E. O. Then (To American Can Co., New York, N. Y.). U. S. 2,313,784, Mar. 16. A dredge top can comprising a can top end member having an upstanding seam surrounding a countersunk section and also having a substantially triangular depressed panel in the countersunk section provided with a dispensing area.

CELLULOSIC RIBBON SPOOL AND THE METHOD OF CONSTRUCTING THE SAME. M. Katz, Bronx, N. Y. U. S. 2,314,146, Mar. 16. A cellulosic ribbon spool and provided with means for spacing the ribbon wound on said spool, said spacing means comprising an elongated strip of material wider than the ribbon and adapted to be arranged between successive windings of said ribbon.

LIPSTICK DEVICE. J. L. Younghusband, Chicago, Ill. U. S. 2,314,260, Mar. 16. A lipstick device comprising a case having an open top, a bottom, and an opening adjacent its lower portion, a holder adapted to hold lipstick movable within said case, a closure adapted to removably close said open top.

CONTAINER. D. Ray (to Arden Farms Co., Los Angeles, Calif.). U. S. 2,314,631, Mar. 23. A polygonal container provided with removable top and bottom.

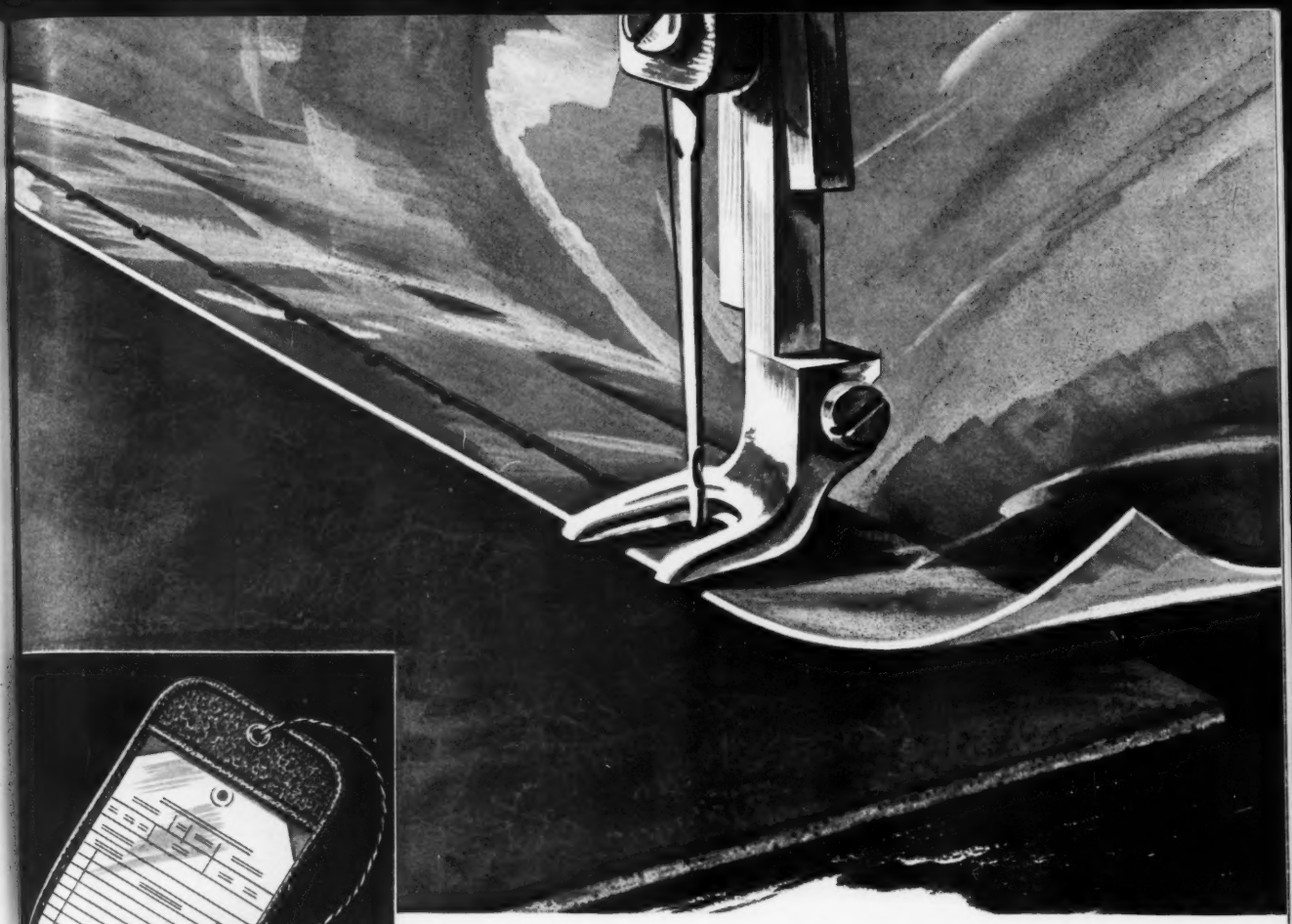
CLOSURE. A. C. Ewer (to Bemis Bro. Bag Co., St. Louis, Mo.). U. S. 2,314,819, Mar. 23. A closure for flat gusseted tubing having side walls and lateral gussets therebetween, comprising a flap formed by folding an end portion of the tubing upon itself along a transverse fold line.

COLLAPSIBLE FRAME FOR CELLOPHANE DISPLAY BOXES. N. D. Logan, Port Washington, N. Y. U. S. 2,315,001, Mar. 30. A container consisting of a collapsible rectangular wire frame comprising four wires bent to form two similar pairs of U-shaped portions, said frame being inserted into a cellophane bag to form container.

CONTAINER. W. A. Rehfield and M. K. Naylor (to The Eddy Paper Corp., Chicago, Ill.). U. S. 2,315,094, Mar. 30. A container of fibreboard or the like having side and end walls, said end walls having hand holes therein, with flaps connected to the upper edges of said end walls and foldable toward one another over the top of the container.

TUBULAR CONTAINER. E. Schulz, Vienna, Germany (vested in the Alien Property Custodian). U. S. 2,315,228, Mar. 30. A container including a body having a conical end and formed with a peripheral recess below such end and a head section of relatively rigid material conforming in shape to the end of the body and seated in the recess in the body to prevent projection of the head section beyond the outer plane of the body.

KEY-OPENING CAN. N. J. Haustrup, Tolderlundsvej, Odense, Denmark (vested in the Alien Property Custodian). U. S. 2,313,198, Mar. 9. A rectangular can having curved corners and having a top provided with a continuous weakened tear-line adjacent and following the margin of the can throughout substantially the entire length of the can.



TRANSPARENT CONTAINERS PROTECT WAR ORDERS

Blue prints—shop orders—drawings—information tags — important war papers—all protected from grease and dirt by Ethocel Sheeting. These containers are typical of the applications made possible by the fabrication advantages found in Ethocel Sheeting. They meet essential requirements of durability and tough service—will not warp, crack or become brittle with age.

ETHOCEL SHEETING

Easily Stitched and Stapled!

Fabricators find that not all transparent sheetings are adapted to stitching and stapling techniques. Here, Ethocel Sheeting offers special advantages. It is inherently tough and flexible, and does not readily break or tear. This outstanding thermoplastic sheeting is easily handled during fabrication and can be relied upon for long service.

Ethocel Sheeting may also be stapled or riveted without fear of tearing or breaking from the punched hole. In addition, it can be easily drawn, scored, beaded, and folded through a beaded edge. These factors make Ethocel Sheeting economical to fabricate and insure durability in the finished package.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • St. Louis • Chicago • Houston • San Francisco • Los Angeles • Seattle

ETHOCEL

DOW PLASTICS

STYRON · SARAN

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

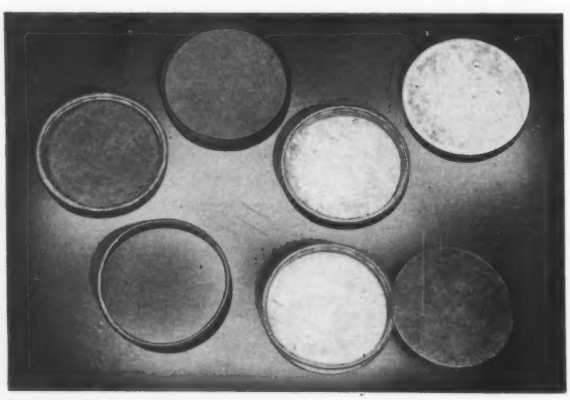
Equipment and Materials

NON-CRITICAL PLASTIC FROM REDWOODS

A non-critical phenolic type thermoplastic, made chemically from the phlobaphanic structures of the redwoods is now available for both war and civilian production of many items, including closures, formerly manufactured from hard rubber and other thermosetting plastic compounds. Credit for the development is shared by The Pacific Lumber Co., San Francisco, The Institute of Paper Chemistry, Appleton, Wis., and the Sheller Mfg. Corp., Portland, Ind. The plastic is said to be adaptable to either compression molding or the standard equipment of hard rubber plants and it is credited with excellent tensile strength and attractive appearance. When special properties are desired, it can be mixed with other resins and plasticizers with control of the formulation ingredients.

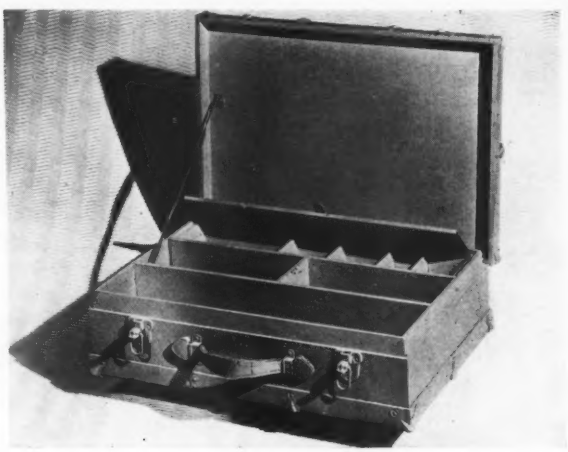
PAPER SCREW CLOSURE

An all-paper continuous thread screw cap has been developed by the American Seal-Kap Corp., Long Island City, N. Y. The paper stock and the impregnating waxes are non-critical materials, available in good supply. Although any disc liner used in metal caps probably could be used for this cap, there is one condition which the cap could not hold up under well and that would be prolonged exposure to moisture or to heat. However, the closure is recommended as satisfactory for non-processed foods, cosmetics and a number of other products. It can be manufactured in the larger sizes. Plans are for the caps to be made at present in sizes from 58 mm. to 63 mm. Shells are covered with glued-on wrappers of two different types for decoration and reinforcement.



WOOD TOOL CHESTS

To help conserve more critical materials and provide rugged, portable storage and protection for technical tools and instruments used on fighting fronts, The Pilliod Cabinet Co., Swanton, Ohio, is producing many different types of special wood "war boxes," including wood tool chests for the Army Air Corps. Advantages of wood for such applications are shown by the wood tool kit. Strong, light and durable, it is exceedingly practical also from the standpoint of packing, transport, use in action and cost. Maximum serviceability under widely varying climatic and physical conditions is assured by choice and treatment of wood, use of rust-proof hardware and construction with water-resistant glues. Efficient accommodation of different sizes and shapes of tools poses no problem, for the adaptability of wood designs and construction makes it a simple matter for experienced craftsmen to adjust size and compartment space for various specific requirements.



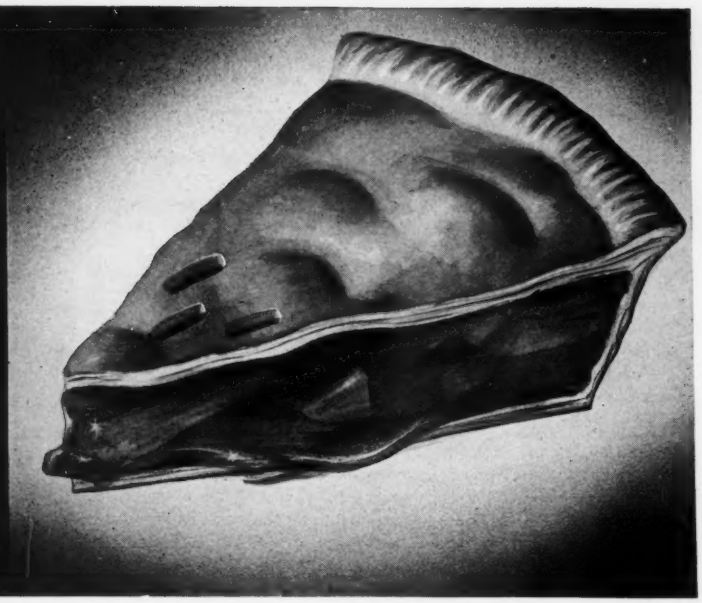
WOOD CAPS FOR BOTTLES

Wooden caps that have been successfully tested for use on drug, cosmetic, food and liquor bottles are being made by Xylon Closure Corp.-Gibson-Jones Co., New York City. The closures are threaded on the inside and have pulp and vinylite liners. Though not as small as a metal or plastic cap, they are easily handled and appear neat and efficient. The process of milling inside threads in high-speed production has been made possible by the invention of a special mechanical device. The closures are made in the most frequently used standard size, 28 mm. and in other sizes ranging from 16 mm. to 33 mm. Caps are found to be strong enough to withstand a torque of 25 inch-pounds when applied to the bottle.

GREASEPROOF PAPER

Herman Scott Chalfant, Inc., New York City, announces a new specialty paper development in Cellutin. It is reported to be a very flexible, greaseproof paper for food packaging and containers. This paper is produced by an impregnation and coating process, using a strong bleached base stock. In addition to resisting turpentine and other vegetable and mineral oils for indefinite periods, this paper has tested better than 100 per cent in Mullen strength and possesses high folding qualities. It has been adopted, it is stated, by a number of large manufacturers of paper cans and other products and found satisfactory.

What a Marine fights for!



JUST a piece of pie . . . but to a Marine, it symbolizes home, his loved ones, the realization of peace and liberty. It's a leatherneck's way of saying, "I'll get this job done in short order!"

One of the most difficult jobs ever to confront the adhesives industry is the sealing of weatherproof cases to withstand all conditions and treatments. Today, glues developed by NATIONAL are delivering the goods . . . helping make possible the realization of that "piece of pie," from Murmansk to Casablanca, from Alaska to Australia.

As you would expect, NATIONAL's expert technicians are in constant consultation with not only Government agencies, but also shipping case manufacturers, and users in many fields. They are thoroughly familiar with all Government adhesive specifications . . . in fact, they helped write many of them. Consult them on your adhesive problems . . . their services are at your complete disposal.

Write for our informative 16-page booklet, "Seal That Case." It sets forth many timely and helpful facts on sealing weatherproof cases.

NATIONAL ADHESIVES

DIVISION OF

NATIONAL STARCH PRODUCTS INC.

820 GREENWICH STREET, NEW YORK — Chicago - Philadelphia - Boston - San Francisco - and All Principal Cities

Plants and People

Army-Navy "E" Awards for outstanding performance were recently presented to the following:

Carpenter Container Corp., Brooklyn, N. Y., April 8 received the Award for "high achievement in producing" weatherproof containers.

Container Corp. of America, Philadelphia plant, for production of paperboard and the corrugated and solid fibre shipping cases used for packing war matériel for shipment throughout the world.

Koroseal Division of The B. F. Goodrich Co., Niagara Falls, N. Y., for quantities of Koroseal now used for power and communication cables, and other applications.

Continental Can Co., Inc., announces the re-election of the following officers: Carle C. Conway, chairman of the board and president; Sidney J. Steele, vice-chairman; Frank J. O'Brien, executive vice-president; Arthur V. Crary, vice-president; J. Sydney Snelham, vice-president and comptroller; Jacob F. Egenolf, vice-president in charge of can manufacturing; Wendell H. Funderburg, vice-president in charge of packers' can sales; Sherlock McKewen, vice-president; Eugene J. O'Connor, vice-president in charge of general line sales; Paul E. Pearson, vice-president in charge of equipment development and manufacturing; John B. Jeffress, Jr., secretary and treasurer; Ralph H. Alexander, assistant secretary and assistant treasurer; Loren R. Dodson, assistant secretary.

The Goodyear Tire & Rubber Co. has announced that every ounce of its rubber hydrochloride sheeting is now being used to wrap airplane engines; tires for military vehicles, etc.

Owens-Illinois Glass Co. recently announced the appointment of R. R. Fowler to the merchandising staff of the Toledo office, and Charles E. Deger to the Chicago office.

S. L. Buschman once again heads the National Can Corp. as president, succeeding L. F. Gieg, who resigned. Mr. Buschman, who served as president of the corporation for more than ten years and who was largely responsible for its successful growth, became president of the Canonsburg Steel and Iron Works in 1941 which position he also retains.

S. L. Buschman

Kenneth R. Brown, credit manager for the past 8 years, has been appointed general sales manager of the company's Sanitary Can Division. F. B. McNamara succeeds Mr. Brown as credit manager of the company.

The Package Machinery Co., though working 100 per cent on war production, recently dispatched one of its ace machinists, Harvey Deschenes, to a major Wisconsin war plant to end a production bottleneck. Mr. Deschenes is acting as instructor for novice operators. This is one more illustration of how the machinery industry is cooperating in the country's war production effort.

Roger L. Putnam, chairman of the board of Package Machinery Co. and mayor of Springfield, has taken up duties as Lieutenant-Commander on the staff of Rear Admiral Alan G. Kirk, Commander in Chief of the amphibious force of the Atlantic Fleet.

Frank Gemsa until recently art director of Modern Packaging has joined the U. S. armed forces.

Dr. Samuel Cate Prescott, Emeritus Dean of Science, Massachusetts Institute of Technology, has been awarded the Nicholas Appert Medal for preeminence in the field of food technology and contributions to the development of food manufacture and processing, according to announcement by the Chicago Section of the Institute of Food Technologists. Presentation will be made at the annual banquet session of the Institute, June 3 in St. Louis.

Dr. S. C. Prescott

Dr. Prescott pioneered in the application of chemistry and bacteriology to the dairy industry, the food canning industry, and water purification by treatment with chlorine compounds. During World War I food dehydration for overseas shipment became his chief activity. During the past year he has been called into consulting service by the Dehydration Committee of the U. S. Dept. of Agriculture and the National Canners Assn. He was instrumental in the founding of the Institute of Food Technologists.

Union Bag & Paper Corp. announces that Henry P. Carruth, vice-president of the Brown Co., Berlin, N. H., will join the company as executive vice-president.

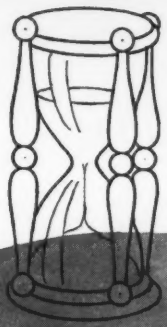
National Starch Products, Inc., at its newly reconstructed Indianapolis plant, started production on an additional 100,000,000 lbs. of corn starch annually to be used in the processing of adhesives, dextrines and starch derivatives used in the war effort. At informal opening ceremonies, Henry F. Schricker, Governor of Indiana, broke the seal of the first carload of corn to enter the plant's conveyors, in the presence of Robert H. Tyndall, Mayor of Indianapolis; C. D. Alexander of the Chamber of Commerce, high-ranking army and navy officers, and executives of the company headed by Frank K. Greenwall, president, and Arthur D. Fuller, executive vice-president.

National Starch Research Dept., in an effort to develop a suitable domestic-grown replacement for tapioca, has entered into a program for the planting, growing and harvesting of "waxy maize," which is a new type of starch-bearing plant.

L. F. Supple, formerly president of the Springfield Glazed Paper Co., has been appointed head of the Rolled Materials Dept. of Reynolds Metals War Matériel Division. Mr. Supple will be in charge of materials developed for the packaging of ordnance, medical, chemical and quartermaster supplies. H. W. Kephart has been appointed General Line sales manager for Reynolds Metals Co. Mr. Kephart, who joined the organization 20 years ago, will have charge of the promotion and sales of all the war matériels being developed by the organization. Both Mr. Supple and Mr. Kephart will have headquarters at Richmond, Va.

Bemis Bro. Bag Co. is increasing its production of multiwall bags by relocating existing equipment at Mobile, Ala., to meet increasing war needs for packaging in the South. C. E. Hayward, will manage the plant with Shelby W. Brown as sales manager.

Armstrong Cork Co. announced the election of Keith Powlison as vice-president and controller; M. J. Warnock, treasurer; Cameron Hawley, director of advertising and promotion. William H. Worrilow, president of the Lebanon Steel Foundry, Lebanon, Penna., was elected a director of Armstrong Cork.



Every 525,600 Minutes There's A SPRINGTIME

IT doesn't take long for a year to roll around—just 525,600 minutes. Every spring Nature blends her marvelous colors to please us . . . the fresh greens of new leaves . . . the pure whites, pinks and reds of blossoms. For years, Heekin color experts ground and blended the colors used on the huge Heekin presses to beautify metal packages. These same experts . . . looking ahead . . . are creating new colors . . . better colors. Today, these huge presses are speeding day and night to produce lithographed cans for the packing of products most necessary to win this war. If you pack such a product, we can help you. But, whatever you pack, we want you to know that Heekin is moving forward and will be ready to serve you. In the meantime—Look Ahead. THE HEEKIN CAN CO., CINCINNATI, O.

HEEKIN CANS

Lithographed

WITH HARMONIZED COLORS

For Your Information

Packaging Institute, Inc., 342 Madison Avenue, New York City, is conducting an informational service at the request of its member companies. This service consists of running in a bulletin a list and description of used equipment available, of equipment needed by various companies and of personnel needed. The Institute requests readers: "If you will send the Institute notice of any used equipment you wish to purchase or notify us of used equipment you wish to dispose of, we will reproduce this information in the next bulletin."

The roving eye of an American soldier, appraising the prospects of ample commissary stores for the expeditionary forces landed in North Africa, is credited with the interesting discovery that the local warehouses, so called, were packed with canned goods from the four corners of the world and bearing labels in many languages and printed in practically the colors of the spectrum. The discovery provided the enterprising Yankee printer with a collector's paradise. His collection of labels from Africa has been acquired by the Label Manufacturers National Assn., Washington, D. C. Altogether there are 36 labels and they represent a diversity of products provided for the use and comfort of the expeditionary forces. Obviously many of the labeled stores had been abandoned by the retreating Axis forces. Typical of the character of these labels are: a tomato label printed in Italian and apparently packed in Italy for the Germans, has German wording on it; a label for milk packed in Argentina for a concern in London has Chinese wording; a label for canned salmon was apparently packed in Siberia for an Australian concern; a Norwegian salmon label has German wording; another label apparently packed in Egypt, has French and Egyptian. Two labels for potatoes from California and Maryland are the only labels printed in one color; the others are all printed in full colors. It is rather interesting to note that all the labels were produced in full colors except those from the United States. The Association has had the collection of labels reproduced in color and is distributing the sheet.

From Australia comes a letter that sums up the packaging situation in that country. Mr. O. J. Grattan of McLaren & Co., lithographers, designers and manufacturers of cartons, boxes, etc., Melbourne, writes:

"In the past 12 months packaging has received a number of severe setbacks, necessitated by the restrictions of manpower, trading and public spending. All cartons must be a primary container and printed in not more than two colors. This also applies to labels. A primary container means the actual container that holds the goods, consequently no bottle or tube, or inner box can receive an outer individual covering, but must be packed in outers of one dozen. Such outer to be printed in one color only on two panels and can carry no advertising appeal or caption whatsoever. Likewise all display advertising is prohibited. These restrictions have a dual purpose of saving material and manpower and also to restrict the spending of money on anything that is not necessary.

"Many luxury lines have been limited—one big confectionery manufacturer told me that his prewar catalogued lines were totalling 480, these have now been reduced to 14; and another large confectionery client of ours has reduced his output to 8 lines and, at the same time, all packages have been de-glamorised. Canned goods and all fruit juices and the general food lines that are canned as specialities have been taken off the market. This has been brought about by our contribution towards the upkeep of the American Army in the Pacific.

"All biscuit manufacturers are working on an 85 per cent war production basis, i.e., biscuits for the troops. The biscuit industry has undergone many drastic changes in packaging and, of course, is restricted in the multiple lines previously packed.

"Any metal or plastic lipstick containers have been discontinued and it is very difficult to make round powder boxes, owing to labour involved. Consequently we have gone into the production of an inner which fits into the carton. All of these restricted packings have fitted in with our own depleted staff and this you can understand from the fact that 100 men have been taken into the Army from this factory, as well as about 70 girls in connection with munitions work."

Over 200 top management executives in Canada and the United States have joined with the Assn. of Canadian Advertisers in the "ACA Continuing Study of Post War Trends." Included in this group are prominent newspaper, magazine and trade paper executives, presidents and general managers of large industrial companies, leaders in banking and finance and several international organizations engaged in research. B. W. Keightley, advertising manager of Canadian Industries, Ltd., is chairman of the ACA Committee on Post War Planning. The Service will cover articles from more than 100 publications and will include a study of news, speeches, surveys, government reports and books. The third issue of the Committee's digest was released in April.

The Fourth Conference of the Institute of Food Technologists meeting in St. Louis on June 2–4 will be a seminar for the interchange of ideas to help solve the most pressing food problems. Colonel Rohland A. Isker, Quartermaster Corps, who is in charge of the army's progressive Subsistence Research Laboratory and the officer largely responsible for the army's efficient K Ration, will present the food problems of the army in an address, "Types of Food Needed by the Armed Forces."

Because the container problem is becoming a critical one, the symposium on containers and packages is expected to be particularly valuable. Papers discussing "The Container Situation as Affected by the War Situation," "Containers for Heat Processed Foods," and "Compressed Dehydrated Foods" will highlight this session. A discussion of "Fibre and Export Food Containers" by Major James d'A. Clark, Quartermaster Corps, will be important for food processors and package suppliers who not only provide food and containers for the army now, but who expect to have a part in feeding the starving nations when peace comes.

A digest booklet is offered by the Battle Creek Bread Wrapping Machine Co., Battle Creek, Mich., to users of any automatic bread wrapping, bread slicing or cake wrapping machines, with full suggestions on the care, maintenance and lubrication of these important pieces of bakery equipment. Copies of the booklet are available upon request and are not limited to users of Battle Creek machines only.

CORRECTION

Stone Straw Co. were also manufacturers of the transparent cellulose tube as well as the fibre sleeve for the Johnson & Johnson All-America Award package, the story of which appeared on page 95 of the April issue.

Omitted from the credit line for the Libbey-Owens-Ford Glass Co. display (page 107 in the April All-America issue) was the fact that the piece was designed and developed as well as lithographed by Kindred, MacLean & Co., Inc.

AFTER months of fighting frigid temperatures, there's nothing that rejuvenates a winter-weary cooling system like a good "dose" of Warner Radiator Cleaner—followed by Warner Cooling System Protector.

Like other automotive products which were formerly packed in metal containers, these two products of the Warner-Patterson Co., Chicago, are now put up in glass bottles, tightly sealed with Crown Screw Caps.

If you are changing to a container made of non-strategic materials, you too will find Crown Closures available in a wide variety of types and sizes to meet your wartime needs.

CROWN CORK AND SEAL COMPANY

**World's Largest Makers of Closures for Glass Containers*

BALTIMORE, MARYLAND

CROWN CLOSURES

CROWN'S WARTIME POLICY: *To supply closures, containers and services for packaging foods, beverages, chemicals, etc., needed by civilians and the armed forces. To build an ever-increasing volume of vitally needed weapons of war for our fighting men.*

Lay-away orders

(*Continued from page 92*) he might be called upon to deliver and enable him to plan production schedules accordingly. In addition, if a customer is signed up, even loosely, there is less opportunity for a competitor putting on sufficient pressure to take the business away from the first manufacturer. Finally, some sort of a priority system for post-war business is definitely advantageous.

Mr. Leonard points out, however, that post-war costs are an unknown factor and expenses have already gone up so much that if the Oct. 1, 1941, OPA ceiling were to apply, "the manufacture of many items in our line would no longer be profitable."

"We do not know that the OPA price control will extend after the war," he said, "but in all probability it will be enforced for some period immediately following the war. If they refuse to recognize the increases in the cost, we may be confronted with the fact that if a large backlog of business has been taken at the 1941 price, it may prove to be a liability instead of an asset."

He also suggested that without deposits, some buyers might cancel the order when the whim strikes them. In addition, he pointed out, manufacturers might adopt different procedures at the end of the war. One, for example, might revert to the manufacture of his 1942 models and take orders for them, whereas another might bring out an entirely different and superior line of equipment, thus creating dissatisfaction among the buyers tied down to purchase of the 1942 units, even though up to that time, they were satisfied with them.

C. E. Schaeffer, of Stokes & Smith Co., Philadelphia, declared that the executives of his company have discussed the question among themselves and so far are against accepting payments now on machines for post-war delivery. They have told one company, anxious to start making payments now on an automatic unit, that they would prefer merely to put the order on file and give it a preference when they were able to resume the production of equipment. Mr. Schaeffer also warned against the speculative element involved in accepting a large quantity of these orders, which can be cancelled at any time.

In summing up the advantages and disadvantages of the lay-away scheme, the advantages found are:

1. Advance orders give the manufacturer some idea of the production he will be called upon to fill, acquaint him with new prospects, familiarize him possibly with some of the new packaging materials that have developed and give him some information on what his customers are thinking about. They may be hatching plans now which, if suddenly unloosed on the manufacturer at the end of the war, will catch him unprepared. If he has even an inkling of what they are about, he can make some preparations.

2. If a customer is signed up with one manufacturer, there is less danger that he will be weaned away by a competitor.

3. The demand for machinery in the post-war era will be so great that considerable ill-will can be engendered among customers, if deliveries are made on a hit-or-miss basis. An established preference rating list would mitigate this to some extent.

The disadvantages are:

1. There are too many uncertainties to accept post-war orders now. Materials may still be on a priority basis for a year or so after the war and costs are unknown. If prices continue to be frozen, a large backlog of such orders, with costs higher, would very definitely be a liability.

2. Some types of equipment are custom built and expensive and plans for their production could not be made without a binding order. In addition, a manufacturer might get loaded up with speculative orders and see his backlog suddenly disappear for any number of reasons.

3. Buyers might insist on delivery preferences according to the size of their order rather than the date of placement.

4. Customers might be dissatisfied, if they were tied down to one line of equipment and a competing manufacturer came out with a new and superior range of machinery.

Latest revisions—K

(*Continued from page 53*) running the conveyor belt through a chamber heated with infra-red lights. This operation not only helps to take the air out of the cartons, but it serves to open the pores of the board thereby providing a better surface for absorption of the wax, and also helps to set the glue before the dipping.

In plants where the double wax wrap is being used: the first wax wrap is sealed directly to the carton while extra quantities of the heated, liquid wax saturate the ends and the center seam of the wrap to insure added protection. After this first wrap, girl operators turn the cartons over as they pass down the conveyor line so that the center seam of the second wrap will appear on the reverse side. Extra quantities of the wax again cover the ends and center seam.

All the wax used in the packaging is odorless, tasteless and non-toxic. Tests for assurance of waterproofness are conducted on cartons taken from each lot of 3,000 completed packages. Placed under at least 6 in. of water at room temperature for 24 hrs., the cartons are then taken out, wiped dry and opened. The contents are carefully observed for signs of moisture.

After the wax-protection processes the cartons are ready for the outer cartons which are constructed of the same board as that of the inner carton in either the seal-end or notched-tuck-end style. These outer cartons are not of major importance as far as protection of the food is concerned, but their main panels carry the specific labeling as prescribed by the Quartermaster Corps. Printed in black ink, this information includes identification of the unit (breakfast, dinner or supper), name and address of the contractor (assembler and packer), a caution about opening the inner bag carefully since it may be reused as a waterproof container for matches, cigarettes, etc., also a warning about covering the discarded cartons, can and papers with sand, foliage or dirt to make the refuse invisible from the air. On the second main panel are printed the contents of the unit plus brief directions for mixing the lemonade powder, coffee and other items. Were the waxed inner cartons not placed in the outer cartons, they would undoubtedly stick together under a hot sun, so the outer carton does play a protective role in that respect.

For shipping purposes the rations are packed in 90-pt. fibre cartons, 12 rations or 36 individual servings in each shipping carton. The ration cartons are stood on end in 3 rows, each row containing 12 unit packages, one row for breakfast, one for dinner and one for supper units.

This heavy carton is then placed in a snugly fitting wooden box that has been legibly marked according to Quartermaster Corps specifications. The boxes are double banded with either flat straps or round wire for shipment.

.... Your product well dressed in

Bemis WATERPROOF Bags

When you pack your product in Bemis Waterproof Bags, it is well dressed in *two* ways. It has eye appeal to help *sell,* if you're still competing for business . . . to help keep your brand *alive* if you're oversold. And it is well-dressed in these bags because they are *extra strong* to stand the added strain of today's capacity loading of trucks and freight cars.

Bemis Waterproof Bags are *custom made* for *your* product, not only in size and shape but in materials and construction. They have a layer of tough, tightly woven fabric on the outside, which is *bonded,* by special adhesives, to layers of paper in any combination your shipping problem requires.

This construction gives you containers that can keep moisture in and dampness out . . . retain desirable aromas and repel objectionable odors . . . shut out dirt and dust . . . resist acids and grease.

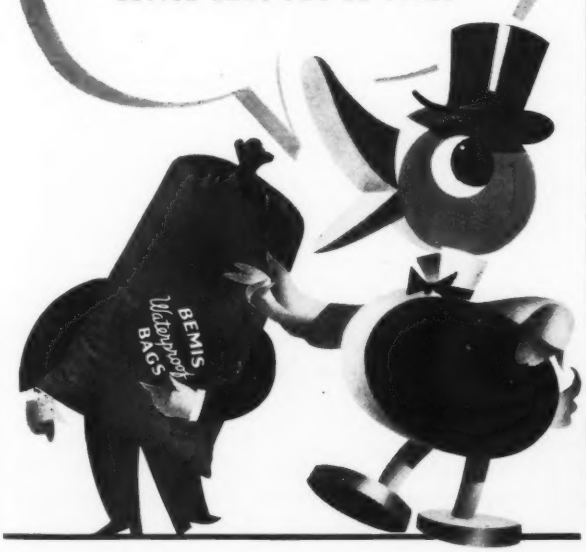
If you have a shipping container problem, why not ask our laboratories to help you? Complete details and samples sent promptly on request.

WATERPROOF DEPARTMENT

BEMIS BRO. BAG CO.

St. Louis • Brooklyn

BETTER BAGS FOR 85 YEARS



LUSTEROID

VIALS AND TUBES

THE ANSWER TO YOUR MERCHANDISING PRAYERS!

● SAVE WORK ● SAVE MONEY

● SAVE WEIGHT ● SAVE MATERIAL

For merchandising with a wallop, it pays to spotlight your products in LUSTEROID vials and tubes.

This modern plastic combines smartness, color appeal, product visibility and display with protective strength and packaging economies in weight, material and work that spell real savings in money.

With LUSTEROID, protective partitioning and special packing are not required. There are no labels to affix because your label can be reproduced as an integral part of the container.

LUSTEROID vials and tubes come transparent or opaque in all colors. Cork, slip-on or screw-cap closures. Standard diameters from ¼" to 1¼", and lengths up to 6."

Write for full facts on LUSTEROID for future requirements.

Lusteroid Container co., inc.

FORMERLY LUSTEROID DIVISION OF SILLCOCKS-MILLER COMPANY

OFFICE AND FACTORY
10 PARKER AVENUE, WEST
MAPLEWOOD, N. J.

MAILING ADDRESS:
SOUTH ORANGE, N. J.

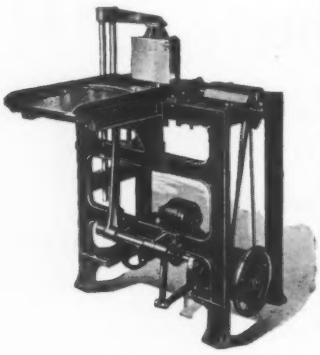
When it comes to performance

—YOU NEED NOT WORRY

if you keep your machines clean and well oiled

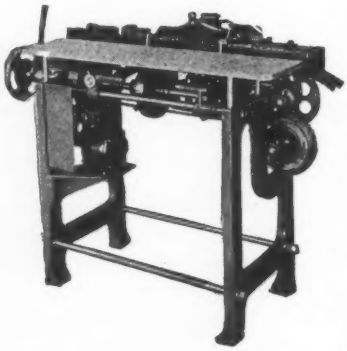
Peters Machines are sturdily built to operate for many years and to give uninterrupted production. Like all machines they must be given a little attention however and we suggest you inspect them periodically to prevent unnecessary wear. Where replacement parts are necessary, do not hesitate to order them.

Every existing machine should be kept in operation and we will extend every effort to help you keep yours at top performance if we can be of service to you. Write us if you have any problems and we will give your inquiry prompt attention.



This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 30–40 cartons per minute, requiring one operator. After the cartons are set up, they drop onto the conveyor belt where they are carried to be filled. Can be made adjustable to set up several carton sizes.

This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 30–40 cartons per minute, requiring no operator. After being filled, the cartons enter this machine on conveyor belt as open, filled cartons and leave machine completely closed, ready to be packed for shipment or wrapped. Can also be made adjustable.



With all of its facilities devoted to the manufacture of war equipment, Peters is contributing directly to the war effort.

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

Heat sealing

(*Continued from page 88*) tension put upon the pulling wire by the resistance of the seal to separation. In one such installation an actual graph recording of this force is made. In another a springless balance is set in line, and the tension value read from its scale as the seal separates.

In a standardized test of this kind, at least the following factors must be considered:

1. A standard method of seal, such as discussed above.
2. Size of specimens and minimum area to be sealed.
3. Rate and kind of separating motion and a reproducible means of securing the motion.
4. Reproducible means of measuring and reporting the resistance of the seal to separation.
5. Conditions of temperature and humidity at which the test is made, also the previous history of the sample seal.

Combining the standard seal test for optimum temperature range and the seal strength test, it might be that for routine inspection the optimum sealing range specimens could be determined by judging seal strength manually and seals made within that range checked for their strength. For research purposes it would be interesting to plot sealing strength measurements against the temperatures at which the standard seals were made and to inspect and to record the resultant curves.

It must be remembered that in the case of coated materials there are many combinations where the seal is stronger than the base material, resulting in a "tear" seal, meaning that on separation of the seal the base material tears without causing the seal to fail. Thus, a strong sealing coating on a weak base material can give a tear seal, but on a stronger base material it may not cause a tear seal. It is the opinion of the writer, though not necessarily shared by various well-informed workers, that in any standardized seal strength test some means of correlating such performances must be worked out. It has been suggested, and it may be shown to be adequate, that in the case of the tear seal one should report the force that had to be exerted, with a notation that the seal was stronger than the base material.

As with the former two tests, there is no standardized test for "blocking," and there certainly should be. The tests used to measure this likelihood are all very similar, however, and call for a given number of surfaces to be held in contact with one another in a stack under a given pressure for a set length of time. Results generally are reported as some temperature (often a maximum) at which the material tested remained in contact, under pressure, for the set length of time without blocking. Thus, a given material may be described as not blocking at a temperature of 130 deg. F. under a pressure of 1 lb. per sq. in. for a period of 24 hours.

Standardization of any such test will have to take into account at least the following factors:

1. Pressure and means of application.
2. The length of the test.
3. Nature and location of heat source.
4. Means of measuring temperature, and location of measuring device with respect to the test specimens.
5. Particularly in cellulosic base material, conditioning of sample before test.
6. The relative humidity conditions under which the test is conducted.

Current general practice is to place the stack of the test

Replace Metals

IN THE PACKAGING FIELD WITH

Formoboard

A new product which can be—

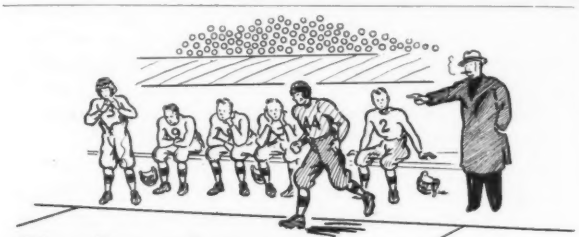
DIE CUT
DRAWN
EMBOSSED or
SILK SCREENED

★ ★ ★

FOR INFORMATION ADDRESS

LaPorte & Austin, Inc.

330 West 42nd St. New York City



Substitutes

FOR SUBSTITUTES

The double-barrelled problem of adhesive buyers these days —and that means practically every packager we can think of— is (1) how to glue the new substitute materials now being used for packaging so they'll stick and (2) how to get adhesives that are available, made from non-strategic materials.

We've solved both of these problems for our customers by developing the glues, gums and pastes to do their jobs, and formulating them of available components. If you'll send us your problems and samples of the materials to be adhered we'll be glad to send you generous samples for trial.

Established 1866

Union Paste Company

1605 HYDE PARK AVENUE • HYDE PARK, MASS.

Seal your cartons with

JOHNSON'S Waterproofing Carton Wax!

If they're going across the Atlantic or Pacific... to our soldiers or our allies... you know this: extraordinary measures must be taken to seal your packages against moisture. Failure to do so may mean loss of vital war supplies.

To give your cartons that *extra* protection against moisture, use Johnson's Waterproofing Waxes. There are four of them... with physical characteristics to meet a wide variety of packaging requirements.

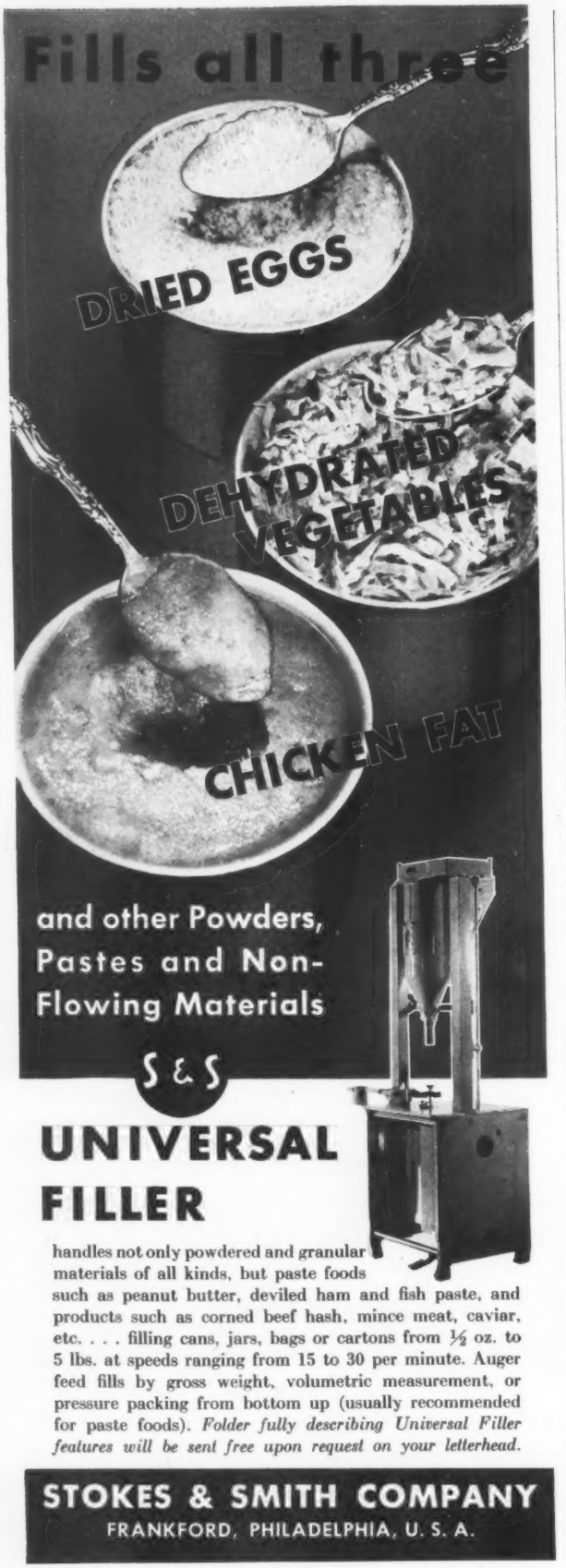
Specific uses? Many manufacturers use Johnson's Waterproofing Waxes to impregnate cartons carrying small arms ammunition—"Food Ration Kits"—propellers—surgical instruments—meat—dehydrated food —the list of uses is almost limitless.

Are you now shipping in paper cartons instead of metal? Then Johnson's Waterproofing Waxes may be just what you need for that "extra" protection. Fill out and send the memo below. Do it today.

★ *BUY U. S. WAR BONDS AND STAMPS* ★

S. C. JOHNSON & SON, Inc.
Racine, Wisconsin

Memo: to S. C. Johnson & Son, Inc.
Ind. Wax Div., Dept. MP-53, Racine, Wis.
Send information on Johnson's Waterproofing Waxes.
Name_____
Address_____



handles not only powdered and granular materials of all kinds, but paste foods such as peanut butter, deviled ham and fish paste, and products such as corned beef hash, mince meat, caviar, etc. . . . filling cans, jars, bags or cartons from ½ oz. to 5 lbs. at speeds ranging from 15 to 30 per minute. Auger feed fills by gross weight, volumetric measurement, or pressure packing from bottom up (usually recommended for paste foods). *Folder fully describing Universal Filler features will be sent free upon request on your letterhead.*

STOKES & SMITH COMPANY
FRANKFORD, PHILADELPHIA, U. S. A.

specimen in a controlled temperature oven with a weight on top of the stack. Some workers make an effort to control the humidity conditions, others do not, though it is well known that these have direct and appreciable effect upon blocking, particularly with cellulosic base materials.

Further tests may be concerned with the effect of various types of aging upon seal strength, since some heat-sealing agents may be affected by oxidative or other changes, or they may be concerned with the effect of standard sealing methods upon moisture-vapor-proofness, greaseproofness, etc.

Fibre cans

(Continued from page 89) is applied on to a stationary mandrel or spindle at about a 45-deg. angle and combining them by the pressure of an endless belt. In this manner a continuous tube is constructed which may be cut to any length, after which metal or paper ends are assembled.

To make the convolute can, a web of paper sufficiently wide to make one or more can bodies is fed on the mandrel at a 90-deg. angle, two or more plies forming the tube.

The lap-seam can is made in substantially the same manner as the metal can, that is, a body blank or single ply of fibre is formed, overlapped slightly and sealed in a mandrel or horn, employing much the same sequence of operations as in metal can manufacture, the main difference being that in applying the ends, it is not possible to use the double seams which characterize the sanitary can. In the latter a flanged body is actually hooked and locked into a curled end. In the case of the all-fibre can, the ends are crimped and, when heat is applied, sealed by the protective coating. The three types each have their own advantages. The spirally wound container can generally be made more resistant to moisture, grease and acid penetration and lends itself to a higher-speed production than the convolute type, while the convolute can is somewhat stronger, can be made in other than the round shape and is more easily labeled, it has been found.

The lap-seam can, because it can be manufactured on regular metal can making machinery, is subject to a higher rate of production than either of the other two, is lighter and, for purposes to which it is suited, is a more economical package.

Tremendous demand has been placed on existing spiral and convolute can machinery since the war, not only for substitute packages, but also for ammunition containers and other war purposes. The result has been, of course, that in order to increase further the output of wartime cans, a development like the lap-seam was needed to utilize idle can making machinery in plants to meet pressing packaging demands.

Credit: Cans described in this article made by American Can Co.

Concrete molds

(Continued from page 58) board of different diameters, glued and stapled into position to form a single closing unit. A hardwood split ring is then metal stitched into position. A sealing shelf is next placed in position and the bottom is then secured. The top, similar in form and assembly to the bottom, is fastened into place with a special tool furnished by the container manufacturer. Liner compounds may be sprayed, coated or slushed on, according to the most readily available method.

Credit: Beacon Container Co., 12 E. 41st Street, New York City.

HIGH-SPEED, LOW COST WRAPPING MACHINE

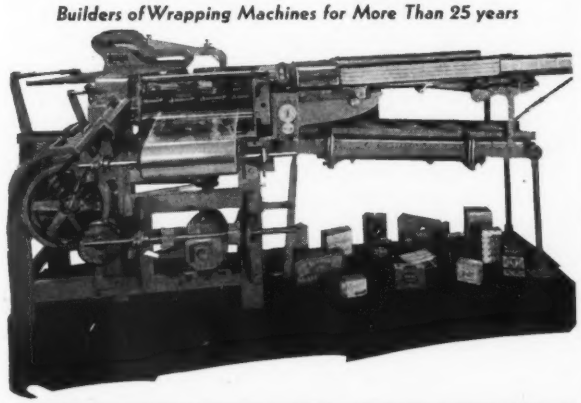
Nine good reasons why you should buy the Hayssen

1. Low capital investment
2. Fully automatic
3. Simplicity of design
4. Low upkeep cost
5. High speed wrapping with variable speed change
6. Perfectly wrapped packages
7. Fully adjustable
8. Cellophane or wax paper wrapping
9. Photo electric cell registration

HAYSSEN MFG. CO.

SHEBOYGAN WISCONSIN

Builders of Wrapping Machines for More Than 25 years



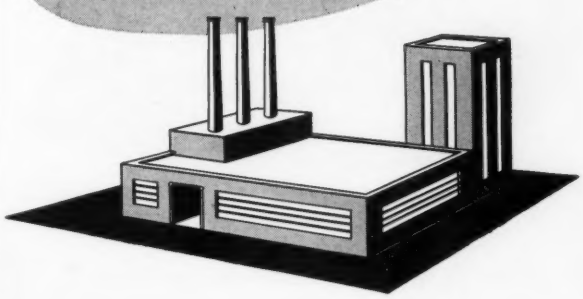
Small Labeling Application time cut 300%!

Automatically dispensed from their container, Kum-Kleen Labels are applied in a split second as no moisture is required—you simply press on—they adhere permanently to glass, plastic, cellophane, wood, metal, paper, etc.

Profit by the experience of leading manufacturers who have cut label application time as much as 300%. Write today to Avery Adhesives, Dept. MP-5, 451 E. Third St., Los Angeles.

In Canada, Enterprise Sales & Distributors, Toronto.

MANUFACTURERS OF *War-Essential* PRODUCTS



METAL EDGE

A number of war plants have derived incalculable benefits from the expertly planned application of the Metal Edge method in **MATERIALS HANDLING.**

Going far beyond the ordinary concept of "packaging", Metal Edge *materials handling,* skillfully adapted to the particular business, saves man-hours and speeds production all along the line.

It may be that we can help you help win the war faster!

NATIONAL METAL EDGE BOX CO.

334 N. 12th Street • Philadelphia, Pa.

METAL EDGE . . . ENGINEERED TO FIT THE NEED

There are over a hundred different types of adhesives, coating and impregnating fluids, sealants and sprayon insulators in the 3-M Line—made from reclaimed rubber, synthetic rubber, synthetic resins and non-rubber materials.

Have you a problem that calls for one of these products?

Our engineers have had years of experience solving these problems and are available to review your manufacturing procedure and make recommendations as to the type of 3-M Adhesive to use.

Why not avail yourself of this service—there is no obligation.

our field engineers will be glad to help you

MINNESOTA MINING & MFG. CO.
SAINT PAUL MINNESOTA

Gentlemen: MP 543
Kindly have one of your adhesive engineers call

on Mr.....

Company.....

Address.....

City..... State.....

Counter cards—help

(*Continued from page 82*) dressed poultry and all the packages that are available are described. The various cuts of poultry are illustrated with diagram drawings and the various packages are shown in the same way. Even the wholly inexperienced clerk by using this sales aid would be able to do a very good job of selling the consumer and of having her satisfied with her purchase.

A meat loaf promotional card is used for purely local promotions, as the meat loaf item was not included in Armour's national advertising. The meat loaf card tells the customer how to prepare hot meals quickly. A pad attached to the card has free recipes from which the shopper may pull off a recipe slip on the use of the meat loaves. For the benefit of the clerk, on the back of the card is printed full information about the kinds of loaves and their uses. These are all illustrated with simple, graphic sketches. After a glance at the back of the card, any clerk could tell the shopper immediately what she might want to know about the meat loaf line. Housewives today not only find it difficult to plan three nutritious meals a day, but also very few of them have the time to prepare a meal leisurely. Consequently they welcome the suggestions for the hot, easy-to-prepare meal. The new clerk who can do this with the aid of his Armour counter card, scores a point for the store in which he works as well as for the manufacturer.

Another card which answers the new clerk's question about what to do with the customer who wants only a little meat of an inexpensive cut, is the special card on stews. Even with a small amount of meat, the housewife can take to the table a fragrant, steaming, full-flavored stew that is healthful and satisfying for the family. On this card, the clerk finds a number of excellent suggestions for good stews, together with their recipes, that he may call to the attention of the customer. Armour reports that the response of retailers to these clerk-aid counter cards has been most satisfactory. Merchants have welcomed them and they have apparently filled a very definite need in groceries and markets where the shortage of experienced help has presented real difficulties.

Wood for war

(*Continued from page 45*) Box fabricators have aided the program by developing new ways to make wood go farther. An example is the Lindeman joint, developed by a New England box company. This is a method by which short lengths of lumber are joined together, side by side, to make solid one-piece box parts of any desired width. Another development, the Strong box end, is the invention of a sawmill foreman. It is a method of gluing nailing ends to short pieces of box lumber which could otherwise not be used because of knots. If the knots threaten to loosen, they are set with the same resin adhesive used as the bonding agent in the water- and weatherproof plywood from which so-called "plastic plywood" airplane bodies are made.

Much of this experience will be applied to civilian industry after the war when firms now making arms, shells, bomb fuses and percussion timers, for instance, do return to peacetime manufacture of business machines, refrigerators, vacuum cleaners, hair clippers, lipsticks. Meantime the three-way conservation problem has not become one of the bottlenecks which plague services of war supply.

SPECIALISTS
in the manufacture of
CAN & BOTTLE CLOSURES

LET us quote you on your requirements. Hundreds of dies and molds available for Essential Oil Cans, Sprinkler Tops, Screw Caps, Aluminum Capped Corks, Lead and Tin Coated Spouts, Metal Specialties. 85 years' experience in meeting the needs of packagers. Call upon us for aid.

CONSOLIDATED FRUIT JAR COMPANY
NEW BRUNSWICK • NEW JERSEY

There IS an ANSWER

... that is why
MID-STATES
invites
ESSENTIAL INDUSTRIES
Jobbers, Shippers and Manufacturers

to send in any problem in packing and shipping or production. Problems which may be overcome through the use of adhesives, coatings, laminating, saturating or combining paper, cloth, or other materials.

Have you a problem along these lines? Write us about it! We may be able to find a practical solution.

MID-STATES GUMMED PAPER CO.

Manufacturers of Green Core Paper and Cloth Gummed Tapes, Mid-States *Really Flat* Gummed Papers, Green Core Stay Papers, and Green Core Gummed Holland and Gummed Cambrics.

2515 SOUTH DAMEN AVENUE • CHICAGO, ILL.

WE WANT IDEAS!

FROM MACHINERY MANUFACTURERS INVENTORS • PLANT MANAGERS AND MACHINE OPERATORS...

The Hudson Sharp Machine Company has devoted a period of 65 years to the development and manufacture of various types of machines used by manufacturers of paper and paper board products. During that period we have originated and improved many of the machines now used in this industry.

During 1942 and to date in 1943 we have turned our entire shop facilities to the manufacture of equipment for the Army and the Navy. We have, during this period, increased the size of our plant and have added new tools and equipment.

We will continue to operate our plant for defense as long as the government requires our services but in the meantime we must, with industry in general, devote some attention and planning to post-war problems so that we may keep our present employees busy and provide places for men from our plant who are in the armed service.

We want to improve the machines we have manufactured previously. We want to add new and needed equipment to our line. We appreciate that men in the paper industry have a large store of ideas which they would like to have developed and placed in use.

To this end we offer our services. We will cooperate with any manufacturer desiring larger production of machines he has heretofore been manufacturing on a limited scale. We will take the inventions of those who have designed equipment for the paper and paper board trade, develop these plans and manufacture the machines for the inventor to sell, or will sell them through our own sales organization. We will meet with plant managers and machine operators who have ideas for improving our machines or for new machines with a view to cooperating with them in the development of their ideas.

We offer this service on a cooperative basis under arrangements which will be mutually and satisfactorily agreed upon.

We invite your correspondence with a view to arranging a personal contact.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

Engineered
TO FIT THE JOB

- Thirty-seven years of experience in fiber board fabrication has given us the knowledge to produce custom-built containers for unusual needs. If you are looking for a husky, lightweight, *leakproof* container that can successfully replace the metal receptacle you have been using, we suggest that you investigate the application of an R-V waterproof laminated container to your particular need.

R-V non-metallic frozen food containers give *complete satisfaction* in replacing metal receptacles. In many instances they are better. The container illustrated was developed to solve the problem of frozen egg packers.

WHAT IS YOUR PROBLEM?

We specialize in designing and producing *custom-built* non-metallic containers for frozen liquid and semi-liquid foods and bulk containers for hard-to-package products.

FILL IN AND MAIL THIS COUPON

ARVEY CORPORATION, 3462 N. Kimball Ave., Chicago, Ill.
Send us your brochure, "Engineered to Fit the Job."

Name_____

Address_____

City_____ State_____

ARVEY CORPORATION

Manufacturers of Quality Fiber Products for over 37 Years

JERSEY CITY CHICAGO DETROIT

Gift supplies

(*Continued from page 49*) beauty salon on New York's upper Fifth Avenue said that he plans to continue Christmas gift wrapping and wherever possible will try to substitute a non-priority material. The cosmetics industry has been in the vanguard right from the start, anyway, in this respect by adopting paper lipsticks, paper compacts, paper powder containers and other non-critical materials. They have done nobly, too, in cutting down on the amount of board used for their regular packaging.

"We still have some cellophane left from last Christmas," said this manager. "Some of the sheets have an angel design on them; others carry a 'Merry Christmas.' In normal years we were not so careful in putting away all the left-over material, but since the war we have become very economical. We utilize everything—all pieces of ribbon, surplus boxes. At least half of our salon staff receives special training in wrapping gifts. They are taught how to wrap gifts properly not only from the standpoint of attractiveness, but also to use a minimum of materials.

"For Easter we used up some wire basket forms left from a year ago. They were in the shape of Easter bunnies. We spray-painted them pink this year to freshen them up. We could not line them with cellophane, so we used tissue and large fluffy powder-puffs. Filled with our standard packages of cologne, powder and other beauty preparations they made attractive gift packages. They made a re-use item, too, because the wire baskets could be pressed into use in the home."

Gifts for men and women in service

Men in service—women too—many millions of them at home and overseas again this year will constitute one of the gift markets. Stores are continuing to feature special "military centers," where articles appropriate for those in uniform may be found. Other departments throughout the stores, such as luggage and leather goods, stationery, toiletries and cosmetics, have their own features to capture the eye of those who are gift-buying for relatives and friends in the services.

There is an absence, however, of the ready-made-up gift packages in stores except for those containing an assortment of foods and confections. One department store in perhaps four or five may be continuing this idea, but the majority feel that these gift packages were not so successful as presenting each popular item separately, letting the customer select the ones she wants, then gift wrapping the choices together.

Where the ensemble military packages are still found, they contain such items as a pen and pencil set, razor blades, some sweets or preserves, and maybe a bottle of ink and cleaning fluid. Another may contain a comb, a box of a dozen or more lead pencils, playing cards, candy or cookies. Among other items popular with soldiers are tooth brush and tooth powder, melba toast, nuts, shoe polish and polishing cloths for metals, shoe laces, bay rum, whisk broom, button-cleaner shield that protects the fabric while the metal buttons are being cleaned and polished, copies of mystery stories. Such articles as purses, manicure kits, facial tissues, cosmetics were found among the gift packages for women in the services.

New postal and military regulations about the number of packages a man in service can receive each month, the necessity of securing permission to have certain items sent to him, particularly if he is out of the country, are among the reasons for discontinuance, in many instances, of the ready-made-up package. The shortage of transportation space has made it necessary for military authorities to discontinue the sending

AMORPHOUS MINERAL WAXES

CROWN QUALITY

	Black		Amber
Color		Color	
Melting Point	190° F. min.	Melting Point	200° F. min.
Penetration at 77° F.—100 grms. 5 secs.	10 max.	Penetration at 77° F.—100 grms. 5 secs.	5 max.

	Yellow
Color	
Melting Point	200° F. min.
Penetration at 77° F.—100 grms. 5 secs.	5 max.

GEM QUALITY

Color	Black and Yellow 2 N.P.A. to Amber 5 N.P.A.
Penetration—50 grms. 5 secs.	16 to 20
Melting Point	185° F. min.
Flash	500 min.

PEARL QUALITY

No. 10

Color	Amber
Penetration—50 grms. 5 secs.	20 to 25
Melting Point	182° F. min.
Flash	500 min.

No. 40

Color	Amber
Penetration—50 grms. 5 secs.	30 to 35
Melting Point	177° F. min.
Flash	500 min.

No. 50

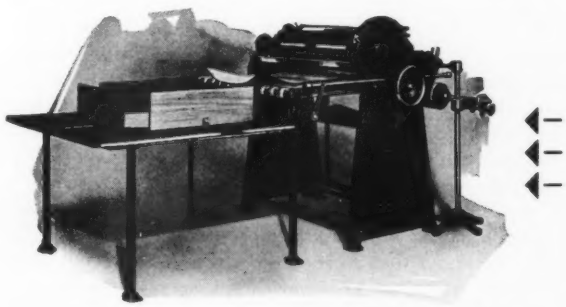
Color	Amber
Penetration—50 grms. 5 secs.	35 to 40
Melting Point	175° F. min.
Flash	500 min.

Manufactured by

AMERICAN WAX REFINING CORP.

CAVEN POINT ROAD Phone BErgen 4-3237, 3238 JERSEY CITY, N. J.

In These Trying Days of
"SHORTAGE of HANDS"

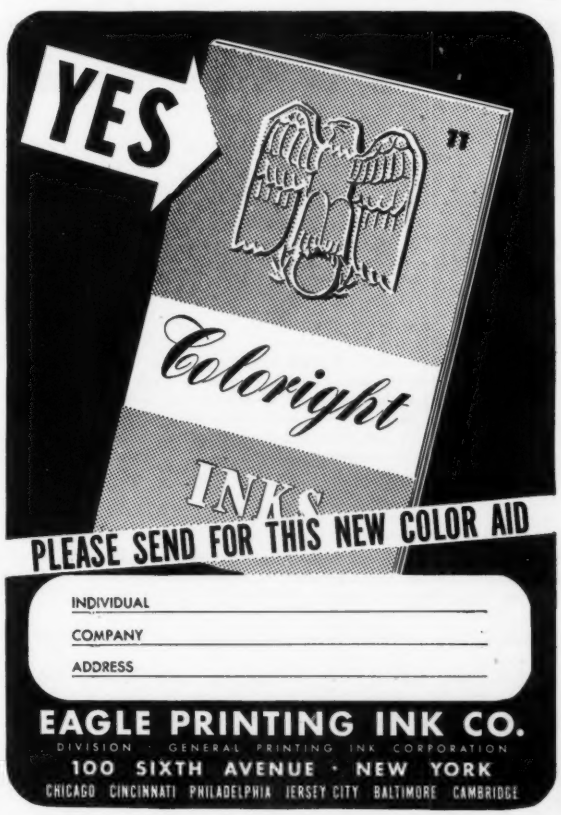


The Beck Sheeter

will release hands for other work, because thru its great simplicity, it needs very little of the operators' attention, once it is set. Especially when equipped with **ELECTRIC EYE CONTROL** are you freed from human element in your sheeting work. Amazing degrees of accuracy in "spot sheeting" work, plus profitably increased outputs. The need for doing your own sheeting is probably more acute now than ever before in your business history, and this because of present conditions.

CHARLES BECK MACHINE CO.

13th & Callowhill Streets Philadelphia, Pa.



WARTIME
SHIPPING PROBLEMS

The 1943 Packaging Catalog will have the largest shipping section in the history of this packaging encyclopedia. More than 50 pages will be devoted to wartime shipping of both Government and civilian orders. Many pages of Government shipping container specs., together with articles on overseas shipping, new problems of wartime shipping, etc., will be included. This is only a sample of the extensive editorial research that will make this book the *must* for the duration in all industries. Every new conversion, development and adaptation in packaging will be fully described and illustrated. Test data on the new substitute wraps, bags, cartons and drums. The only directory to the more than 200 goods and services vitally necessary to all packers of all types of goods. More than 500 pages.

Only $2.50 per copy

Every copy will be sold
No free or complimentary distribution

1943 Packaging Catalog

Packaging Catalog Corporation
122 E. 42nd Street New York, N. Y.

Classified Advertisements

All classified advertisements payable in advance of publication. Rates: $5.00 up to sixty words; enclosed in border, $10.00 per inch. Publisher reserves the right to accept, reject or censor all classified copy.

WANTED TO BUY: New or used automatic or semi-automatic cottage cheese or sour cream filling machine. Reply Box 178, Modern Packaging.

SITUATION WANTED: TROUBLE SHOOTER for you. Whether you use or produce folding paper cartons—your packaging, your selling, or your manufacturing headaches in these war-torn times are right down this man's alley. Has proven capabilities including 20 years shirt-sleeve management of all activities of Eastern folding paper carton plant. Age 45, good health, energetic, personable, humanist. Negotiation by interview solicited. Reply Box 177, Modern Packaging.

WANTED: Man to operate asphalting equipment. Must be thoroughly experienced. State age, dependents, record of experience and salary desired. Reply Box 174, Modern Packaging.

Advertisements in this section are restricted to those of a helpful nature. *Positions Wanted; Help Wanted; Lines Wanted; are typical categories.*

Classified Advertising Department
MODERN PACKAGING MAGAZINE
122 East 42nd Street New York City

of too many packages and senders would rather send items which cannot be bought in the usually well-stocked Army PX.

There is another side to the gift story with regard to service men. They are great shoppers themselves and the post exchanges are veritable bazaars of merchandise where the men go on pay day to select gifts to send home to mothers, sisters, wives and sweethearts. Most of the merchandise is composed of staple lines—well packaged, but not too glamourized.

There is, however, one important use for ready-packed service men's packages, especially those containing foods and confections. Many large business firms send these gifts to the men who have gone into service from their companies. There are several organizations who do this packing and take care of the whole bother of sending. The sender simply furnishes the list and pays the bill.

Department store gift packaging

Due to L-239 and its restrictions on packaging materials used by department stores, there is still much confusion in the attitude of various stores throughout the country toward gift boxes and wraps. Some stores which formerly gave gift boxes freely have adopted a policy of giving the customer as little as possible other than merchandise for her money. Other stores are still doing a bang-up business and their attitude toward customer and gift boxes has not changed. Many stores have ceased gift wrapping entirely except for a fee.

This confusion has partly been brought about by the restriction on the use of store boxes to 65 per cent of the quantity used during a specified base period of 1942. However, this reduction has created no particular hardship, because decreased delivery service and the increase in the number of "takes," have cut down considerably the number of boxes a store requires.

Many department stores, however, do not want to dispense entirely with their long established customs of marking the Christmas buying season with some sort of Christmas wrapping. However, the supplies situation, the possibility of further restrictions on paper and paperboard, make buyers of holiday packaging supplies extremely hesitant about predicting what the Christmas season will bring.

Opinions of the higher-ups in leading metropolitan department stores sum up the situation as follows: "We wish to keep up our high standards of packing holiday merchandise. We have ordered our supplies, but whether we will get what we have ordered is something we cannot say. We have some boxes left from last Christmas and we hope to get more to supplement these. If we cannot, we shall just have to make out with what we have."

Most stores, who want such materials, however, seemed optimistic about being able to get set-up boxes and some sort of overwrap for their store boxes. Macy, for example, plans to continue the use of the red tight-wrap, set-up boxes of other years. Most stores will continue their special gift wrapping departments, although they will not be able to sell empty boxes in these departments under L-239. Such departments, however, can supply the store's regular merchandise box with the customer's purchase, and add to it the wrap and ties a customer pays for.

The whole gift packaging problem is one that nobody really likes to face this year, but in spite of all difficulties, there seems to be a fine spirit of cooperation. Suppliers admit frankly they can't handle very much of such business because they are too busy with war work, shortages and labor problems. Users, on the other hand, are too busy getting merchandise and packaging of any kind, to worry too much about non-essential merchandising frills.

INDEX TO ADVERTISEMENTS

Aluminum Co. of America 9
American Can Co. . . . . Inside Front Cover
American Wax Refining Corp. 115
Anchor Hocking Glass Corp. 25
Armstrong Cork Co. 39
Arrow Mfg. Co., Inc. 10
Arvey Corp. 114
Avery Adhesives 111

Beck, Charles, Machine Co. 115
Bemis Bro. Bag Co. 107
Burt, F. N., Co., Inc. 59

Carr-Lowrey Glass Co. 31
Celanese Celluloid Corp. 11
Chicago Printed String Co. 29
Classified 116
Consolidated Fruit Jar Co. 113
Continental Can Co. 19
Continental Folding Paper Box Co , Inc. 34
Crown Can Co. 95
Crown Cork & Seal Co. 105

Dobeckmun Co., The 24
Dow Chemical Co. 99
du Pont de Nemours, E. I., & Co. Inc., Cel-O-Seal Section 97
Durez Plastics & Chemicals, Inc. . . . . Inside Back Cover

Eagle Printing Ink Co. 115
Eastman Kodak Co., Chemical Sales Division 83

Gardner-Richardson Co. 16–17
Goodyear Tire & Rubber Co., Pliofilm Sales Div. . . . 7

Harris-Seybold-Potter Co. 91
Hayssen Mfg. Co. 111
Hazel-Atlas Glass Co. 15
Heekin Can Co. 103
Hudson-Sharp Machine Co. 113

International Printing Ink, Div. of Interchemical Corp. 32–33

Johnson, S. C., & Son, Inc. 109

Kimble Glass Co. 20

LaPorte & Austin, Inc. 109
Lowe Paper Co. 38
Lusteroid Container Co., Inc. 107
Lynch Mfg. Corp. 18

Mason Box Co. 62
Menasha Products Co. 30
Mid-States Gummed Paper Co. 113
Minnesota Mining & Manufacturing Co. 112
Monsanto Chemical Co., Plastics Div. 118

Nashua Gummed & Coated Paper Co. 40
National Adhesives, Div. of National Starch Products, Inc. 101
National Can Corp. 12–13
National Metal Edge Box Co. 111
New Jersey Machine Corp. 26

Owens-Illinois Glass Co. 28
Oxford Paper Co. 36

Package Machinery Co. 84
Palmer, Frank D., Inc. 37
Peters Machinery Co. 108
Phoenix Metal Cap Co. 3
Pneumatic Scale Corp., Ltd. 93

Redington, F. B., Co. 5
Reynolds Metals Co., Inc. 60–61
Riegel Paper Corp. 14
Ritchie, W. C., & Co. 27

Sav-way Industries 22–23
Sefton Fibre Can Co. 6
Shellmar Products Co. . . . . Back Cover
Stokes & Smith Co. 110
Sylvania Industrial Corp. 21

Union Bag & Paper Corp. 35
Union Paste Co. 109

Waldorf Paper Products Co. 8

MODERN PACKAGING

BRESKIN PUBLISHING CORPORATION

122 East 42nd St. **New York City**

WE HAVE
THIS TO SAY ABOUT
PLASTICS
Nothing that an aluminum man can have to say about plastics can add to their virtues or subtract from their very genuine possibilities.
Actually, Alcoa welcomes the strides being made, technically and commercially, by this great and ingenious industry.
This is not mumbo-jumbo. It is a distinctly pious thought.
The more folks who get the big idea that the bright hope of industry, postwar, is to do new things new ways . . . the more designers who really get down to cases, the better for all of us. Imagineering is a nationwide must.
Plastics do many things better than any other material.
Alcoa Aluminum does many things better than any other material.
The two can team up to do a better job for you in certain situations than either could do alone.
As for Alcoa Aluminum, busy seven days a week on war production, we can only remind you that when our strong alloys are again available, you are going to have to throw your old measuring sticks into the scrap heap. New costs, new strengths, new technology, new finishes.
Of such things will postwar jobs be made. On such things must our "eighth-day" thinking be concentrated.
ALUMINUM COMPANY OF AMERICA, 2104 Gulf Building, Pittsburgh, Pennsylvania.
Alcoa Aluminum
IMAGINEERING
. . . and we have this to say about METALS

This advertisement by a leading light metals producer talks good, common sense.

OBVIOUSLY, plastics are not going to put metals out of business—as some Sunday feature writers would have you believe. Both groups of materials are cast for leading postwar roles in what we all hope will be a bright new world. Both have their own, unique advantages.

Plastics, for example, are marked by high resistance to chemical and atmospheric attack. They are light. They have excellent electrical insulating values and many desirable thermal properties. They offer a range of integral colors practically as wide as the spectrum, and many forms are transparent, translucent or opaque as the customer specifies. They can be molded into intricate shapes that require little, if any, finishing. They are warm and friendly materials to touch.

On the other hand, no molded plastics have yet been developed that equal metals for surface hardness, heat resistance, rigidity or structural strength per unit of area. Conventional molding methods require expensive molds and high heat and pressure limiting them to production of relatively small objects in relatively large quantities.

In short, there will be many a postwar job where metals will be a clear and obvious first choice.

There will be many other postwar jobs which logically call for plastics.

There will also be many occasions when plastics and metals will work together on the same job.

And there will be other times when a materials engineer will be hard put to make a choice.

Frankly, as one of the nation's largest producers of plastics, Monsanto would rather lose some of those close decisions than win a job which plastics could not handle. In the long run, one such misapplication can lose more business for plastics than losing a dozen close decisions. MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield, Massachusetts.

☆ ☆ ☆

MONSANTO PLASTICS
SERVING INDUSTRY...WHICH SERVES MANKIND

THE FAMILY OF SIX MONSANTO PLASTICS

(Trade names designate Monsanto's exclusive formulations of these basic plastic materials)

LUSTRON (polystyrene) • SAFLEX (vinyl acetal) • NITRON (cellulose nitrate) • OPALON (cast phenolic resin) • FIBESTOS (cellulose acetate) RESINOX (phenolic compounds)

Sheets • Rods • Molding Compounds Tubes • Castings • Vuepak Rigid Transparent Packaging Materials

What can this army helmet tell you about packaging?

OFFHAND, you might think that army helmets and packages are as far apart as war and peace.

Yet they do have much in common. For even though the shell of an army helmet is a completely different proposition structurally . . . it illustrates the versatility of Durez resins and points the way to their future possibilities in packaging.

This versatility is a Durez feature familiar to packaging designers. They know the lustrous sheen—the "eye-appeal" that Durez molding compounds give to their designs. And they know, too, their impact strength, durability, resistance to mild acids, alkalis, and water—characteristics that have given new utility to countless packages and closures.

Today, of course, our molding compounds and resins are restricted to use for war "packages." The helmet shell, above, is but one example of the new material developments made possible by the plastics field. It is a fiber composition, impregnated with Durez resins. This development will be available to you after the war. And so will countless others—developments that are now being used to make everything from Tommy-gun grips to airplane wing-tips!

Therefore, if you want to keep in the swim in post-war packaging, keep posted on Durez developments!

DUREZ PLASTICS & CHEMICALS, INC.
405 WALCK ROAD, NORTH TONAWANDA, N. Y.

DUREZ

PLASTICS THAT FIT THE JOB

NO JOB TOO BIG FOR OUR PACKAGING ENGINEERS!

SHELLMAR PACKAGING ENGINEERS are applying METHOD II packaging technique — preserving metal assemblies and sub-assemblies through DEHYDRATION—to the products of all industries.

Gadgets no bigger than your fist and giant searchlights large enough to live in are being packed and preserved from moisture-vapor damage through SHELLMAR'S special packaging service.

SHELLMAR'S engineers will come directly into your plant, study your problem with your technical staff. They will build a moisture-proof bag big enough and strong enough to do your job. They will then demonstrate to your men how the package should be applied so that THERE ARE NO FAILURES.

THIS SERVICE IS NOW WORKING FOR DOZENS OF WAR PLANTS. Our packaging engineers are strategically stationed to serve all industries everywhere.

SHELLMAR
PRODUCTS COMPANY

COMPLETE PACKAGING SERVICE TO INDUSTRY

224 S. Michigan Ave.
CHICAGO, ILL.

MOUNT VERNON, OHIO

PASADENA • CALIFORNIA

3115 Empire State Bldg.
NEW YORK, N. Y.